NORTHERN POWERGRID

Delivering on our promises

Stakeholder Report 2020

Performance snapshot – NPg DNO group[1]

Network

Network	Actual 2019-20
Number of customers	3.9m
Total DNO network length	96,814km

Reliability & Availability

Reliability & Availability			Actual 2019-20	Target 2019-20[2]	Status	Trend[3]
Customer interruptions[4]	Northeast	Inc. exceptional events	50.7	–	–	▲
		Exc. exceptional events	45.5	58.0	Achieved	▲
	Yorkshire	Inc. exceptional events	52.3	–	–	▼
		Exc. exceptional events	49.8	62.7	Achieved	▼
Customer minutes lost[4]	Northeast	Inc. exceptional events	42.7	–	–	▲
		Exc. exceptional events	41.2	50.7	Achieved	▲
	Yorkshire	Inc. exceptional events	43.7	–	–	▼
		Exc. exceptional events	40.2	53.0	Achieved	▼
Incentive performance reward/(penalty) – IIS[5]		£m	£19.2m	–	–	▶◀
		£/customer bill	£1.86	–	–	–

Customer Satisfaction

Customer Satisfaction		Actual 2019-20	Target 2019-20[2]	Status	Trend[3]
Overall Broad Measure of Customer Satisfaction score out of ten (rank out of six)[6]		8.90 (4th)	8.2	Achieved	▶◀
Incentive performance reward/(penalty) – BMCS[7]	£m	£4.5m	–	–	▲
	£/customer bill	£0.43	–	–	–

Connections

Connections		Actual 2019-20	Target 2019-20[2]	Status	Trend[3]
Time-to-quote (days)[8]		7.3	4.8	Missed	▼
Time-to-connect (days)[8]		38.8	39.3	Achieved	▲
Incentive performance reward/(penalty) – connections lead time	£m	£0.1m	–	–	▼
	£/customer bill	£0.01	–	–	–
Incentive on Connections Engagement penalty – ICE (if applicable)	£m	Nil	–	–	▶◀
	£/customer bill	Nil	–	–	–

Social Obligations

Social Obligations		Actual 2019-20	Target 2019-20[2]	Status	Trend[3]
Individual Stakeholder Engagement and Consumer Vulnerability (SECV) score out of ten (rank out of six)		6.71 (3rd)	8.00 (2nd)	Missed	▼
Incentive reward	£m	£1.5m	–	–	▼
	£/customer bill	£0.14	–	–	–

Innovation

In the year we spent £3.5m (95%) of our Network Innovation Allowance. Our diverse innovation portfolio contains 32 projects that span our four innovation priorities for ED1: developing our smart grid, delivering smart meter benefits, developing our digital services and improving affordability.

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 2019-20, measured by the Occupational Safety and Health Administration (OSHA) rate – 0.14 against a target of 0.31 – representing three reportable accidents in a workforce of around 2,600.

We also achieved no Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) incidents in the year.

Environment

We achieved our oil leakage and business carbon footprint targets for 2019/20. We are also ahead of our target in putting overhead lines underground in areas of natural beauty in the ED1 period to date.

Financials

Financials		Northeast	Yorkshire	Overall
Unrestricted domestic tariff charge		£74.36	£62.24	**£67.26**
Total expenditure	£m	181.3	226.7	**408.0**
	% of cost allowances	110%	105%	**107%**
	% of cost allowances (ED1 to date)	99%	94%	**96%**
	% of allowed revenue	70%	69%	**70%**
Dividends paid[9]		20.7	27.4	**48.1**
Gearing[10]		51%	47%	**62.0%**
Credit rating[11]		A3/A/A-	A3/A/A-	**Baa1/A/BBB+**
RORE[12]		8.0%	6.9%	**7.2%**

Notes:
1 All financial figures in 2012-13 prices and refer to Northern Powergrid overall unless otherwise stated. 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 2018-19.
4 Unplanned & unweighted figures. Indicative figures as at July 2020, 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 exit year five 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; northernpowergrid.com/yourpowergrid

A word from our CEO

2019-20 saw us complete another good year of performance and progress as we continue to make good on our promise to deliver more for less for our customers. It's great to see the benefits of output improvement flow through into our day-to-day service levels.

We remain on track to deliver or exceed the commitments we made in our business plan

We made a range of ambitious **commitments** in relation to the things we would deliver for customers between 2015-23 whilst laying the foundations to enable a low carbon future. The story so far is one of delivering even more for less: our customers are getting more outputs than we committed but we are doing that at the same time as keeping our costs in line with the spending targets set by our regulator.

Our **stakeholders** are a big part of our planning and decision making. This past year has seen us step up our engagement with over 100 tailored events in a program that has reached in excess of 450,000 stakeholders. The feedback we are hearing is enabling us to ensure that we continue to meet the needs of our customers today and set ambitious plans for the future.

We are currently developing our business plan for the next price control period – that will run from 2023-28. Our Customer Engagement Group, established in Autumn 2019, is scrutinising our plans closely – which is already having a positive impact on the levels of challenge and the quality of the justification we are producing to support our proposals to meet the needs of current and future customers.

Delivering on our plan commitments is driving further improvement in the service we provide to our customers day in, day out…

Safety remains our number one priority and we're proud to have had our best ever year in this area. We recorded only three recordable accidents, none of which involved anyone coming into contact with live electricity. As we've been producing this report, we've passed another significant milestone in our business – exceeding 500 days without a recordable accident in our workforce – a performance that we believe positions us as a sector leader.

Maintaining a **reliable** power supply is the bedrock of our operations and remains a top priority for our stakeholders. 2019-20 was an important year in that respect, because we achieved 28% fewer and 31% shorter power cuts compared to the levels that prevailed when we published our business plan[1]. That goes well beyond the commitments we made in our plan.

We have also transformed the quality of our **customer service,** recording another best-ever performance in 2019-20. Our average customer satisfaction score was 89%, an improvement of 6.7 percentage points on the levels we were achieving at the start of the period back in 2015. We haven't finished improving – and we continue to invest in our technology and our people in order to deliver ever-improving levels of customer service. We still have some ground to cover before we can claim to be amongst the leaders in the industry in this area – but we have that in our sights thanks to the improvement we have already delivered.

At the same time our **connections** lead times have reduced by 27% keeping us on track to achieve our commitment of a 30% improvement by the end of the period. We know that speed is not the only measure of success and we have been working with our stakeholders to deliver more tailored services, backed by technology such as on-site quotation and an award-winning technology innovation that allows customers to design connections for themselves.

We're ahead of our targets on all key **environmental** measures that we set out to achieve at the start of the period, delivering significant reductions in our business carbon footprint (44% reduction to date), oil lost to ground (37% reduction) and sulphur hexafluoride emissions (34% reduction).

Our **social** programmes continue to support those in our region who need it the most. Our work with local partners such as the NHS Trust, West Yorkshire Fire Service and Affordable Warmth Hull to name a few, is addressing challenges with vulnerability and fuel poverty, delivering benefits for our customers.

[1] Relative to our ED1 baseline – 2012-13.

…whilst managing risks and ensuring the resilience of our network

Cyber and physical security go hand in hand and continue to present a growing threat to our network and our customers as technology evolves and the 'bad guys' become more sophisticated. We are committed to rising to the challenge, having invested £15.8m in cyber defences to date with a further £9.8m in the pipeline before the end of the period. This investment was not in our original plan and has been enabled by finding efficiencies elsewhere in our cost base.

Climate change also presents an evolving threat to our network, and it is one we are taking seriously. Flooding affected our regions again in 2019-20 and we're pleased to report that our flood defence programme is ahead of target. It will see a total of 274[2] sites on our network defended against flood risks by 2023.

We are laying the foundations for the net zero transition…

Leading the drive towards **decarbonisation** in our regions is at the heart of our plans.

We are deploying innovative solutions and developing our operations to establish Distribution System Operator (DSO) capabilities that will be needed for the low carbon transition. That includes our **smart grid enablers** programme, testing the market for **flexibility** services and deploying **Active Network Management** to get more low carbon generation connected to the network.

…and adapting our business and operations to support the region in the face of the COVID-19 pandemic

Our COVID-19 response planning began in early 2020 – so we were ready to respond as soon as the threat became a reality. We put changes in place to make sure that services for our customers were not interrupted by restrictions from the lockdown or absence levels in our workforce.

Our team of key workers responded superbly – and I couldn't be prouder of what we managed to achieve in very challenging circumstances. We quickly adapted our working procedures to make sure that our work and our workplaces were COVID-secure. I'm pleased to say that as a business we have continued to perform strongly throughout this period. The services we deliver directly to customers were not affected – and in fact we registered our highest-ever customer service satisfaction results right in the middle of the lockdown.

Although national measures impacting the business only came into force towards the end of the 2019-20 regulatory year, we have seen some short-term impact on the delivery of a small number of our commitments as a result of the pandemic in areas such as:

- Our investment in upgrades to electrical connections in high rise buildings, as a result of social distancing measures.
- A small number of our investment programmes that were being delivered by contractors who decided to furlough their staff, for example undergrounding of overhead lines in Areas of Outstanding Natural Beauty.
- Our smart grids programme had to be paused because it was one of the few that required people to work closely together in relatively confined spaces – so the COVID-19 working restrictions meant we had to develop a new set of working methods for those tasks.

We are already making progress to recover these backlogs, which we do not anticipate will have a material impact on the overall outcome for the price control as a whole.

What the pandemic has brought into even clearer focus is the importance of us being ready to adapt what we do and how we did it to make sure we get the job done for our customers. We will take that same approach as we continue to find ways to deliver on and outperform our plan commitments, whilst building on our engagement with our stakeholders to shape our business plans going forward.

Phil Jones
Chief Executive

[2] We are forecasting 214 upgrades and 60 sites that will be surveyed but are unlikely to require intervention.

Who we are

What we do
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 2,600 employees operate 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 £80 per year[1]) 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 Transpennine 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.

More recently, we played a key role with the NHS to mobilise and provide power to two new Nightingale hospitals in our region in the wake of the COVID-19 pandemic.

Northern Powergrid at a glance

8 million
customers

2,596
employees

spanning 9,650
square miles

96,814km
cables

3.9 million
homes and businesses powered

6 region operating
model

64,355
substations

[1] 2019/20 prices. Based on average domestic consumption of 2,900kWh.

We're proud to be responsible for the safe and reliable distribution of power to 3.9 million homes and businesses through our network of more than 64,000 substations, over 96,000km of overhead lines and underground cables, spanning almost 9,650 square miles.

The energy system is changing...

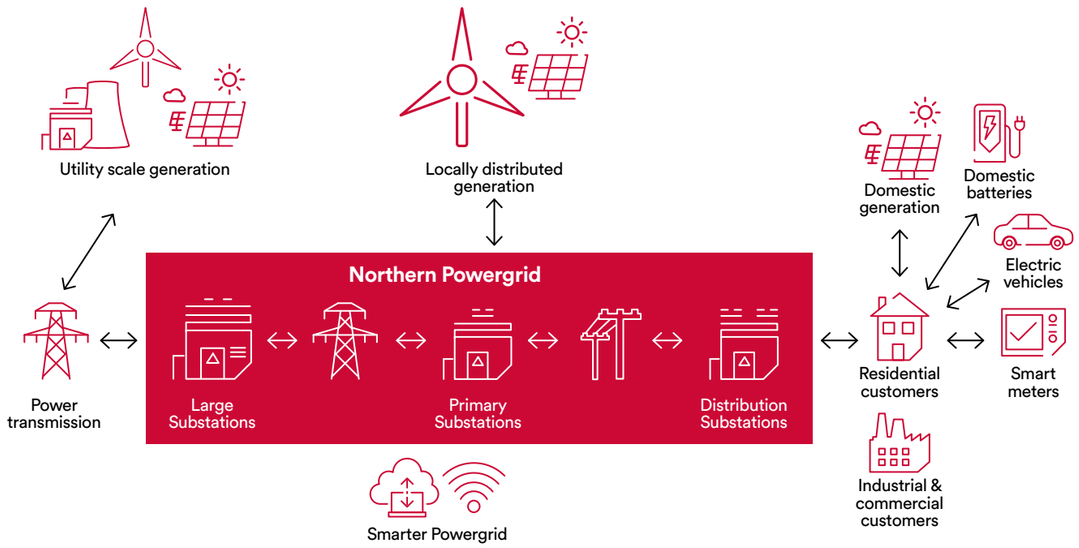
As we move to a low-carbon economy, new technology and digitisation are driving unprecedented change in the way energy is created and used. As an electricity infrastructure provider, we need to make sure that our network is able to safely and securely support these changes whilst maintaining high standards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

Here at Northern Powergrid, we have embarked on a transition to expand our capabilities and become a local optimiser of the energy system. The new role we are taking on is that of a Distribution System Operator (DSO).

What it means
We know from extensive public engagement that a broad range of stakeholder support our plan.

You can access our DSO v1.1 development plan, along with other supporting information by visiting; northernpowergrid.com/DSO

Where we fit in the electricity industry



Our engagement strategy

Stakeholder engagement is key to our business strategy and integral to commercial success.

Proactive engagement not only helps us identify better ways of ensuring that customers benefit from the energy that they're using; it also keeps us abreast of changing needs and desires.

Over the past 12 months, for example, our customers and stakeholders have repeatedly told us that they want our business to focus on tackling the climate emergency. They want more opportunities to collaborate on plans that strive for net zero, and to work with us to create a cleaner, more sustainable society. We can only achieve this by responding effectively to customer demands.

Transparent planning and responses

To this end, we have recently published a new Stakeholder Engagement microsite.

This microsite is designed to not only provide advanced information about the events that we're hosting on net zero, innovation and our business planning for 2023 to 2028; it also provides easy access to key consultation documents and shows our Stakeholder Engagement action plan.

We are publishing this for the first time on a microsite, so that customers and stakeholders can regularly review what they've told us, how we're responding to their feedback, and when we're likely to implement the desired changes by. If they don't like what they're seeing, they can easily provide feedback to us.

There are dozens of stakeholder-requested actions that we are progressing at any one time, and these can be tracked online.

Improved, holistic engagement – and a commitment to continuous cycles of improvement – is something that we take pride in at Northern Powergrid. We believe that two-way engagement – listening to customers, stakeholders and peers, while sharing learnings and best practice – is a privilege, especially when customer voices are challenging our business to be more ambitious than ever before.

Embedded and digitalised engagement

At Northern Powergrid, engagement is everyone's responsibility.

As part of this, we have recently restructured our business around our regions, with a greater focus on local accountability. Local engagement is led by General Managers in each area and supported by newly-recruited Customer Service Managers who look after the customers and stakeholders where they live and work.

These changes – and the accompanying increase in the scale, reach and adaptability of our engagement – has resulted in a notable uplift in the number of stakeholders that regularly engage with our business. Dozens of stakeholders now attend multiple engagement events each year.

This has been aided through the widespread adoption of digital engagement methods. This was initially done in response to the expressed needs of our time-poor and hard-to-reach stakeholders – but has taken on a new meaning as part of the nation's response to COVID-19.

Digital engagement has helped us to strengthen relationships with previously under-represented and hard-to-reach groups of people – and while this will remain a key channel for engagement moving forwards, we will not forget the digitally-excluded. To this end, we continue to work closely with our charitable partners to make sure that digitally-excluded customers have adequate opportunity to engage about their energy needs.

Our engagement principles

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

Stakeholder Led	We are flexible, proactive, and responsive. Early deliberative engagement informs our plans and allows for testing with stakeholders.
Representative & Inclusive	We will not leave anyone behind. All voices are heard from across the diverse region we serve.
Open & Transparent	Explaining what, why, and how we work. Encouraging active participation from customers and stakeholders to aid planning and decision making.
Accessible	Employing a range of engagement methods designed to engage all ages and capabilities. Educating stakeholders so they can understand our business, make better informed decisions and provide richer input.
Responsive & Adaptive	Best practice leads us, experience shapes us. Our programme is continuosly evolving as we learn more about the needs of others.

Our engagement in 2019-20

Over the past 12 months, our engagement has grown in size and ambition, given the requirement to engage on both our current business plan (2015-23) and our future business plan (2023-2028). This has been reflected in the range of engagements that we have undertaken.

A snapshot of our engagement activities in 2019-20

As part of engaging on our current business plan (2015-23), we have continued to work with our Stakeholder Panel which provides quarterly feedback on initiatives such as our e-auction process for procuring flexibility services and our Community Energy project at Boston Spa. This project will potentially deliver between £40 and £50 savings per year, per household. We have also continued to meet regularly with our Social Issues Expert Group which is instrumental in shaping our work with vulnerable customers.

Elsewhere, we have hosted six executive-led roundtables attended by over 200 stakeholders who, together, initiated 21 measurable actions which have been progressed since the meetings took place.

We've also been liaising with partners about growing our service offerings, notably in the vulnerable customer space. In March 2020, for example, we held a Future Fairness Conference which was attended by almost 100 delegates from over 60 organisations. This resulted in 20 measurable actions which have informed our business planning and been shared with stakeholders.

We are now in the process of establishing a Future Fairness Panel to represent seldom-heard minority voices and ensure they are adequately heard by senior executives in our business.

Strong engagement numbers and satisfaction in 2019-20

In total, over the past 12 months, we have engaged over 450,000 stakeholders either online, at conferences, interviews, roundtables or digitally, through over 100 tailored sessions. By responding to feedback, we've widened the breadth of our engagement pathways and are now using 26 different methods. Overall, customers and stakeholders are pleased with the service they receive, meaning we've seen a 2.2 percentage point increase in the year in satisfaction from customers to 89% overall.

Across our business, teams have worked hard to ensure our engagement approach is comprehensive, coordinated and holistically embedded.

Engagement innovations this year

We've introduced a range of new engagement pathways to ensure that we can meet the emerging needs of stakeholders and those who have previously faced barriers, such as those who are hard to reach, vulverable, or time-poor.

- Significant increases in digital engagement– 1,200 views of our digital engagement events
- +100 stakeholders taking part in our 'Heat Map' webinars
- Webinar training sessions on our new AutoDesign and Future Energy Scenarios tools, with over 150 stakeholders taking part.
- Interactive Zoom sessions with Local Authorities to talk through our decarbonisation plans.
- Published digital recordings of our engagement sessions for time poor stakeholders.
- BSL captions introduced to our online videos.
- Rural telephone interviews with our Consumer Panel members to ensure all voices are heard.
- An online engagement platform that collates our reports, discussions and published actions for our stakeholders.
- Targeted forums and co-creation workshops with over 100 stakeholders and partners.

Looking ahead – engaging for a better future

In 2019-20 we began our engagement to develop our RIIO-ED2 business plan for the period 2023-2028. The process was set out in 3 'waves'.

Wave 1
Open Engagement
2019 – Q2 2020

Wave 2
Refinement
Q3 2020 – Q1 2021

Wave 3
Finalising & Refreshing
Q1 2021 – Dec 2021

Initial business plan submission – July 2021

Final business plan submission – Dec 2021

— **Sharing final plans and testing** your support for them

— **Adapting our plans** before finally submitting them to our regulator, Ofgem

Wave 1 of our RIIO-ED2 business planning: open engagement
In addition to our regular engagement, we are carrying out a focused and extensive engagement programme to develop our RIIO-ED2 business plan. This engagement programme started in September 2019 and will help us to challenge and develop our thinking in every aspect of our business, and ensure that our 2023-2028 business plan delivers on your priorities.

Our ambitious and far-reaching stakeholder engagement programme for RIIO-ED2 involves three 'waves' of engagement, the first of which was conducted from September 2019 to the end of June 2020. It contained a range of open engagements with customers and stakeholders about their priorities for the electricity network of the future. In this wave, we engaged over 4,000 stakeholders.

Wave 2 of our RIIO-ED2 business planning: refinement
In August 2020, we published our Emerging Thinking, a two-part publication which summarised what we'd heard from stakeholders in Wave 1. This initiated the second of the three waves of engagement. Click **here** to view the report.

In Wave 2, we will playback what we have heard from stakeholders to-date and provide them with five potential service levels to choose from, some of which will be no more expensive than today (options A and B) and some of which may be more expensive but offer an improvement or intensification of our services (options C, D and E). We expect to engage thousands of customers on these service levels, to understand willingness to pay for any service enhancements. Already, over 1,000 customers have completed an online survey to tell us their thoughts, with thousands more attending deliberative workshops, regional conferences and webinars between September 2020 and February 2021 to share their thoughts on our evolving business plan.

Wave 3 of our RIIO-ED2 business planning: finalising and refreshing
Finally, in March 2021, we will initiate the third wave of engagement. This is when we will test our conclusions from Waves 1 and 2 with customers and stakeholders, prior to publishing them in our initial business plan in July 2021. Again, we envisage engaging thousands of people as part of our Wave 3 engagement, and would love to hear from you as part of this engagement on our next business plan.

Some of our ED2 engagement in 2019-20

A few examples of our engagement pathways in ED2 engagement in 2019-20

Expert panels

In addition to considering in-year activities, our Stakeholder Panel has actively contributed to the evolution of our Emerging Thinking and will consider this twice in October and November 2020. Our Social Issues Expert Group and Community Energy Panel will also scrutinise Emerging Thinking and provide meaningful feedback to our business.

Technical panel

This is an informed group of 6 stakeholders from the academic community with whom we actively test our technical thinking and planning for ED2.

Consumer panels

We have set-up three customer panels to follow the business planning journey from inception to conclusion – one in Newcastle, one in Leeds and one covering rural areas across our region. All three contain between 30 and 40 participants. We have also established a small and micro business panel with 20 participants which is meeting five times in 2020.

Elected representative outreach

Over the 12-month period, we completed in excess of 30 bilaterals with elected representatives. These engagements have a strong regional and/or constituency-led focus, to make sure we understand regional variation and aspiration across the North East, Yorkshire and Northern Lincolnshire

Quantitative surveys

As part of Wave 1, to get a broad understanding of customer opinion, we have already conducted several quantitative surveys about investment priorities for domestic and SME customers. We envisage engaging several thousand more customers in this way in 2020-21. We are also developing targeted surveys for 11-16 year olds and 16-18 year olds, to ensure future customer voices are widely represented and understood.

Colleague engagement

Finally, it is important that we understand colleague aspirations for ED2 and beyond. We are conducting extensive internal engagement via emails and SMS, as well as running internal roadshows where feasible, to ensure internal voices are reflected in our ED2 business plan.

To get involved please:

Visit
engage.
northernpowergrid.com

Follow us on Twitter
@powergridnews

Follow us on Facebook
@northernpowergrid

Email us at
yourpowergrid@
northernpowergrid.com

Write to us at
Stakeholder Relations,
Northern Powergrid,
98 Aketon Road,
Castleford WF10 5DS

Our Customer Engagement Group

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 RIIO-ED2 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 which is particularly important in the rapidly-evolving low-carbon energy landscape.

The CEG has pushed Northern Powergrid to think strategically about its engagement and, as a result of its feedback, we have introduced several new initiatives such as a SME Panel dedicated to engaging small and micro business owners; a Rural Panel dedicated to engaging rural customers in remote locations; and some Customer Values research, working with a mixed group of customers to identify enduring values which are essential for Northern Powergrid to adhere to as the electricity evolves over the next 10 to 20 years. We are also developing a series of "energy IQ" videos with the support of the CEG, to help explain key electricity and business plan concepts to members of the public.

The CEG operates in an open and transparent manner, publishing updates about its work on **ceg.northernpowergrid.com**. At the end of the business planning process, the CEG will publish a report on its findings alongside our business plan submissions to Ofgem in December 2021. Ofgem will reflect on this report, alongside our plan, as a source of challenge or validation of the approach we took when developing our plan.

"The CEG is working on behalf of Northern Powergrid's customers, challenging the company to make its emerging business plan reflects regional interests; understands and addresses customer needs and preferences; and is driven by delivering for customers in an evolving and growing low carbon energy landscape. It is an honour to be doing this on behalf of customers and stakeholders."

Justin McCracken
Chair, Northern Powergrid CEG

1. Safety & Security

Over 500 days
since our last OSHA incident

COVID-19 secure
All of our workplaces are compliant with the latest government guidelines

£15.8m
spent in ED1 to date on upgrading our cyber defences

Our engagement...
We established a working group with a number of our field colleagues to assist in enhancing the specification for our replacement arc flash work wear contract.

What our stakeholders said...
The discussions with our field colleagues concluded that the current arc flash work wear had a number of opportunities for improvement in terms of fit, feel, weight and comfort.

What have we done...
We have committed the improvements identified by our field colleagues to be incorporated in the new work wear products.

We're proud to have achieved over 500 days accident-free.

Our Commitments

— **Safety is our number one priority and our industry leading safety performance is something we are very proud of. This year we exceeded our headline safety commitment of halving our accident rate, going 327 days accident free in the regulatory year 2019-20.**
— **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), local authorities and Crimestoppers.**

How we've done in 2019-20

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 three OSHA accidents in a workforce of around 2,600, none of which were electrical in nature and no serious injuries were sustained. This translates into an OSHA rate of 0.14, a 67% reduction compared to our ED1 business plan baseline, which is well ahead of our annual target and sees us exceed our ED1 target to halve our accident rate. We incurred no RIDDOR incidents in the year which places us as leaders in the industry.

COVID-19

— The impact of the COVID-19 pandemic hit towards the end of the regulatory year.
— As a provider of essential services for our customers, it was vital for us to continue to offer a reliable service whilst keeping our colleagues safe at work. Our preparations started in early 2020 and we very quickly implemented comprehensive measures to ensure that we could continue to carry out our essential work in a COVID-19 secure manner.
— We have continued to operate effectively as a business throughout the lockdown and have successfully adapted our operations, both in the field and the office, to maintain the safety of our workforce and the public.

Mental health and wellbeing

— The importance of mental health and wellbeing have been amplified by the COVID-19 pandemic and it's been another year of positive progress on this front.
— This year, in addition to our awareness training programme for business managers and targeted internal programmes focused on mental health, we introduced 'Wellbeing Wednesdays'.
— This programme is a weekly communication to all colleagues that covers areas such as exercise and healthy eating, encouraging colleagues to practise good habits to look after their mental health.

— As a business with a large vehicle fleet, safety on the road is a key part of our safety strategy and 2019-20 was also a personal best year in this area.
— Our fleet that drove close to 18 million miles was involved in only 36 incidents, four fewer than last year.
— We rolled out a new safe driving programme, aimed at our apprentices and younger driving population, that provided increased awareness advanced driving skills.

Awareness

— In our business plan, we committed to increasing awareness in our communities of the dangers of electricity.
— One group we work with is school age children and this year we reached in excess of 50,000.
— Despite engagement and our partnerships with the NFU and Local Authorities, we continue to see a disappointing number of over-head 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 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 as such our investment has continued in Critical National Infrastructure (CNI) sites. In the remainder of the period, our priority will be to renew all substation locks and complete the implementation of our Alarm Receiving Centre.
— We have seen further reductions in metal theft, which we can attribute to investing in our relationships with the police and Crimestoppers.
— As our information technology and the associated risks evolve, we continue to respond by enhancing our cyber security defences. We have accommodated £15.8m of investment so far on cyber defences, enabled by driving efficiencies in our cost base, and plan to spend a further £9.8m in the remainder of the period.

Looking ahead

Consistency and Outperformance

— As we look to the close out the ED1 period, safety will remain our top priority. We aim to maintain our strong track record and will set our sights on a future with zero accidents.
— COVID-19 will continue to impact our operations and key awareness programmes. A priority will be to retain the high standard and positive impact we have in our communities whilst maintaining a COVID-19 secure environment for our colleagues and customers, and continuing to follow evolving government guidance.
— On overhead line strikes, we will develop new strategies and enhance our existing partnerships to reduce incident volumes by the end of ED1.

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	Ahead	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 roll-out	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

School children engagement

10,000 more children engaged on safety

Our performance measures[1]	2018-19 actual	2019-20 actual	2019-20 target	Annual Status	ED1 target	ED1 status
HSE compliance	✓	✓	✓	Achieved	✓	On Track
OSHA rate	0.31	0.14	0.31	Achieved	0.09[2]	Ahead
RIDDOR rate	0.12	0.00	0.10	Achieved	0.10	Ahead
Children reached through school safety education programme	53,676	59,364	40,000	Achieved	50,000[2]	Ahead
Overhead line contacts	54	40	20	Missed	20	Recoverable

[1] Targets and status assessments reflect ED1 business plan target unless otherwise stated.
[2] Reflects a stretch target.

Adapting our operating and continuing to deliver for our customers in the wake of COVID-19

We have developed and practiced emergency plans for various scenarios, we activated our business continuity and pandemic plans in early 2020. During this period, we worked closely with Ofgem and the Department for Business, Energy & Industrial Strategy to continue to manage and maintain our network for our customers and the economies we support whilst also supporting the efforts to delay the spread of COVID-19 and managing our workforce to keep them safe.

Mobilising a safe and effective operational response

— Supporting front line colleagues by issuing health and safety instructions based on the latest medical advice to ensure appropriate precautions are taken when engaging with customers.
— Implementing arrangements to restrict access to our Network Control and Dispatch areas so only colleagues who need to be present are given access.
— Actively monitoring the supply chain to ensure we have the necessary equipment and resources available to support our operations, colleagues and customers.

Delivering excellent customer service and supporting our communities

— Working with our key partners to understand the development that diversity introduced to our current vulnerability demographic as a result of COVID-19.
— Proactively contacting more than 250,000 customers on our Priority Services Register to assure them that our teams remain available 24/7 and asking customers who required a site visit to let us know in the event that they are shielding or self-isolating so that our teams can take appropriate precautions.

Providing a working environment that is COVID-19 secure

— Maintaining high standards of hygiene in and around our facilities, following the latest expert advice.
— Increasing remote working, where possible, so that we can reduce occupancy levels at our sites to protect colleagues who have critical roles in managing our network.

Next steps

— Continue to proactively provide our colleagues with the latest public health advice and government guidance.
— Providing a COVID secure workplace for those colleagues who need to utilise our office spaces,
— Adapting our approach to continue to deliver high levels of customer service.
— Monitor employee absence levels so we can respond swiftly and accordingly to any change in resource levels.

2. Reliability & Availability

389,000

customers' power has been restored within 3 minutes as a result of our Automated Power Restoration System (APRS).

CI (-28%)

A 28% reduction in the number of unplanned power cuts

relative to our ED1 business plan baseline

186 flood defences

installed in ED1 to date

Our engagement...

We work in collaboration with a number of local authorities on climate change adaptation, who look to us as a key partner in enabling this work.

What our stakeholders said...

Following severe flooding, Calderdale Council asked us to develop a plan to improve local resilience and maintain power supplies during future bouts of extreme weather.

What have we done...

Brought forward a £200k investment programme by 12 months, replacing four flood-prone substations in Hebden Bridge with a new one built on higher ground.

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.

Our Commitments

- **In our ED1 business plan, we committed to reducing the number of unplanned power cuts by 8% and their duration by 20%.**
- **Five years into ED1, we've continued our consistent outperformance on our reliability commitments enabled by the use of new technology and targeted innovation projects.**
- **We're also looking ahead, ensuring that our network is prepared for the connection of more renewable generation and low carbon technologies such as electric vehicles.**

How we've done in 2019-20

Network performance – power cuts

- In 2019-20, the number of unplanned power cuts reduced by 28% and their duration reduced by 31%.
- Customers who lost power for over 12 hours received immediate compensation payments. 2019-20 saw a 12% increase in the number of customers experiencing power cuts lasting more than twelve hours, partly due to a number of significant storms in Spring 2020 which contributed to the wettest February on record.
- Deployment of innovative technologies has significantly contributed to our improved network performance in the period. Automatic Power Restoration System (APRS) technology has continued to be installed in 2019-20, restoring power supplies by automatically switching to alternative connections on our network. As a result in ED1 to date, 389,000 customers have had their power restored within 3 minutes.
- Additionally, our Foresight fault prediction project has made hundreds of thousands of pre-fault identifications prior to them becoming permanent faults.
- We continue to target underperforming parts of our network for some of our worst served customers. In 2019-20, our system planning and investment targeted 171 under performing circuits.
- In our ED1 plan, we planned to use smart meter data, to improve performance and information we provide to our customers. The delay to the national smart meter roll out has impacted how we can develop projects using the data. We are internally ready, mobilising key projects to upgrade our trading and customer service systems.

Network health[1]

- 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 (4.3 percentage points) of Ofgem's Asset Health and Criticality measure (62.5%) for the period to date – ahead in our Northeast licensee and slightly behind in Yorkshire. We expect to outperform our output targets, delivering up to 10 percentage points more by the end of the period.

Network performance – planned power cuts

- Where essential maintenance and repairs to the network are required a planned power cut may be necessary.
- In our plan we committed to reducing the length of these planned works; in 2019-20 these reduced by 3% (6 minutes) to an average of 195 minutes.
- We also operate a policy where planned works in the winter months don't leave customers without power for more than 4.5 hours.

Resilience – flooding

- We saw some major flooding in the year across our region, most notably in the Calder Valley, Lower River Aire and River Don areas [see case study, page 46]. These events highlight the importance of protecting our network from extreme weather conditions – a high priority for our stakeholders.
- In 2019-20 we upgraded flood defences at another 24 sites, taking our total in ED1 to 186 and we are forecasting to complete 214 physical flood defence upgrades on our network in ED1. We had previously committed to upgrading a further 60 sites, these have been surveyed and proven to be resilient to flooding in line with national standards (ETR138[2]).

Network capacity

- One of the commitments we made in the period was to ensure adequate capacity to enable our customers to connect generation and low carbon technologies.
- In terms of network utilisation, >99.5% of our primary substations are less than 95% utilised. These levels reflect the same risk we had at the start of ED1 and have been maintained through careful management of demand on our primary substations and targeted interventions through load transfers and reinforcement.
- Our voltage reduction programme aims to free up capacity on our network. In 2019-20, 128 sites were reconfigured, freeing up 1.2GW. We've now completed 85% of our programme, with a total release of 3.2GW in ED1 to date across 470 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 experienced to some investment programmes in 2020-21 due to COVID-19 are looking to be recovered; we remain confident in delivering our commitments by the end of ED1.

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 (due to external factors)	2022-23

Going beyond our plan

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

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

Flood Defences
We are forecasting that 76% (118) more sites will be resilient to flooding compared to our ED1 business plan commitment. 58 upgrades and 60 minor works and surveys

40% shorter

30% fewer

118 more

Our performance measures[3]	2018-19 actual	2019-20 actual	2019-20 target	Annual Status	ED1 target	ED1 status
Unplanned CML (Northeast)	43.4	41.2	50.7	Achieved	47.9	Ahead
Unplanned CML (Yorkshire)	36.4	40.2	53.0	Achieved	50.0	Ahead
Unplanned CI (Northeast)	52.4	45.5	58.0	Achieved	57.1	Ahead
Unplanned CI (Yorkshire)	48.2	49.8	62.7	Achieved	60.0	Ahead
Planned CML (Northeast)	4.3	2.9	6.3	Achieved	4.0	Ahead
Planned CML (Yorkshire)	2.4	1.9	3.4	Achieved	2.5	Ahead
Planned CI (Northeast)	1.9	1.4	2.7	Achieved	1.8	Ahead
Planned CI (Yorkshire)	1.1	1.0	1.3	Achieved	1.1	On Track
Flood defences	162	186	141	Achieved	214[4]	Ahead
Health Indices (% of Monetised Risk value)	52.6%	66.8%	62.5%	Achieved	105-110%[5]	On Track

[1] Measured by Network Output Measures (NOMs) – see glossary.
[2] Engineering Technical Review of flood risk management in the electricity industry.
[3] Targets and status assessments reflect ED1 business plan target unless otherwise stated.
[4] An additional 60 sites will be surveyed in the remainder of ED1, meaning 274 will have been assessed and upgraded to mitigate the risk of flooding.
[5] Reflects a stretch target.

Upgrading 43km of our underground network in Bradford and surrounding areas to benefit over 160,000 customers

The Bradford cable project is a £30m investment programme to improve the reliability and resilience of the electricity network serving Bradford and the surrounding area. The work, which started in October 2019 and will run to the end of 2022, focuses on replacing five of the major circuits that supply electricity to approximately 51,000 of Bradford's homes and businesses. This work will ensure that our network is capable of meeting the existing demand for power as well as any future increase in demand as the population grows and more households swap their cars for electric ones.

The first phase of work focuses on upgrading two major underground circuits made up of fluid filled cables, with more modern and sustainable alternatives, this is due to be completed in October 2020. The second phase of works for the remaining three circuits commenced in May 2020 and is forecast to complete in October 2022.

We have worked closely with Bradford Council and local stakeholder groups to agree the least impactful routes and times for our work particularly where road closures have been necessary. This has resulted in carrying out the some of the work outside of peak times and during school holidays to minimise disruption. We have developed and maintained these strong working relationships with Bradford Council holding public information evenings and issuing regular updates via letters and through local and social media.

3. Customer Service

89%

customer satisfaction, ranking 4th out of 6 DNOs for 2019-20

Over 2 million

outbound communications in the year

84.7%

of complaints resolved within 1 day of being received

Our engagement...

We undertook focused engagement around our power cuts service with customers in 2019-20 and combined this with feedback received from our customer satisfaction surveys.

What our stakeholders said...

Our customers fed back that they wanted more information and communications on the day of a planned power cut and more explanation of the reason in advance.

What have we done...

In 2019-20 we implemented pro-active communications in advance of the power cut and also on the day of a planned power cut. Communications are scheduled automatically by our CRM system to provide:

— Initial notification letter

— Digital reminder 72 hours and 24 hours before a planned power cut

— Live alerts on the day of a power cut using text messaging and e-mails triggered by our on-site team

— Asking for customer feedback on completion of the work

We're delighted to have achieved a best-ever satisfaction score in 2019-20.

Our Commitments

— Our aim is to be the best at serving our customers and we've made significant progress in ED1 to date – improving our services year-on-year 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 10/10 service in our interactions across all of our service offerings.

How we've done in 2019-20

Customer satisfaction

— Overall customer satisfaction with our services has improved by 6.7 percentage points since the start of the ED1 period. Our score of 89.0% in 2019-20 was a best-ever result.
— We're continuing on a path of improvement which compares well with best-in-class customer service organisations in other sectors.
— Despite our improvement, we rank fourth when compared to other UK distribution network operators; however, we believe the initiatives we are implementing will support continued improvement to bridge the gap to the leaders in the industry.

Technology

— A key enabler to being able to deliver great customer service is our Customer Relationship Management (CRM) system. Introduced in 2017, CRM covers a range of our customer facing operations, including general enquiries online services, planned power cuts, service alterations and disconnections. In February 2020, we launched CRM-Go, app technology which provides us with the capability to issue real time updates to our customers who are subject to a planned power cut, resulting in a 1.7pp increase in planned power cut satisfaction scores in the first quarter of 2020.

Improving our workforce

— Another enabler is our people agenda. Our comprehensive induction programme 'Best Welcome' arms our new colleagues with the toolkit to deliver the levels of service we expect for our customers.
— In 2019-20, over 700 front line 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.
— Recently, we've began recruitment of regional customer service managers to run alongside the operational leads to deliver local development of tailored customer service plans.

Communication

— We continue to refresh customer contact information to enable proactive contact with them when necessary, whilst complying with data protection regulations. At present, we currently hold 57% of households' mobile phone numbers and 65% of email addresses, positioning us 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 live web chat and CRM Knowledge Base to assist customers in reaching a quick resolution.
— We want to ensure that customers who are registered on our Priority Service Register (PSR) are given the care they need and their call is routed directly to a dedicated team as opposed to our Interactive Voice Response (IVR) system. PSR customers who are medically dependent receive proactive contact when they experience a power cut.

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.
— We made two changes to our complaints handling in the year: firstly we've used our CRM system to assist with our root cause analysis for complaints, and secondly, we launched a new programme to gain real time text message feedback from our customers allowing us to deploy rapid improvements to our service.
— We are now resolving complaints within the first day nearly 85% of the time, well ahead of our ED1 business plan target of 80%. We're also closing out complaints within 31 days over 97% of the time, compared to our ED1 business plan target of 95%.

Looking ahead

— 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 also expand our capability for communicating with large numbers of customers via emails and dealing with inbound text messages from customers.
— We will also upgrade a new telephony platform and IVR system. This activity will deliver a modern cloud based Contact Centre as a Service solution that is scalable and can automate a high volume of our customer calls.
— Our improvement plan will remain for connections, specifically for our small works customers. This includes enhancing our systems, reducing lead times and improving quality of service. [For more detail, see pages 31-34].
— We are working with stakeholders to scope out a unique 'at your service' initiative; aiming to provide a more flexible and convenient service at evening and weekends for certain connections and general enquiries service lines.

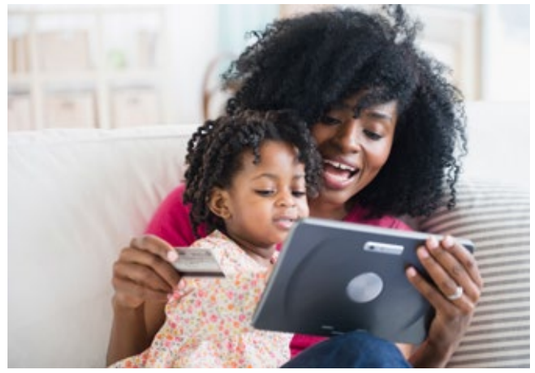
Our business plan commitments

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	Ahead	2022-23
3.4 Provide better information to customers experiencing power cuts through voice or digital communication channels	On Track	2020-21
3.5 Use technology to enable our contact centre to move from being largely reactive to mostly proactive	Delivered	2019-20
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:
We are forecasting a 10.7 percentage point improvement compared to our ED1 business plan baseline

Complaints resolved (Day+1)
We are forecasting a 34.2 percentage point improvement compared to our ED1 business plan baseline



>93%

>88%

Our performance measures [1]	2018-19 actual	2019-20 actual	2019-20 target	Annual status	ED1 target	ED1 status
BMCS Overall	86.8%	89.0%	85.0%	Achieved	93.0%[2]	Ahead
BMCS: Power cuts	88.1%	89.0%	85.0%	Achieved	93.0%[2]	Ahead
BMCS: Connections	84.9%	88.4%	85.0%	Achieved	92.5%[2]	Ahead
BMCS: General Enquiries	89.3%	90.5%	85.0%	Achieved	94.3%[2]	Ahead
% of unplanned power cut calls answered	97.9%	97.8%	99.0%	Missed	99.0%	On Track
% of unplanned power cut calls answered within 20 seconds	88.6%	87.9%	90.0%	Missed	90.0%	On Track
Complaints resolved within 1 day	80.1%	84.7%	80.0%	Achieved	88.0%[2]	Ahead
Complaints resolved within 31 days	96.3%	97.2%	95.0%	Achieved	98.0%[2]	Ahead

[1] Targets and status assessments reflect ED1 business plan target unless otherwise stated.
[2] Reflects a stretch target.

‘CRM Go’ introduced in February 2020 for planned power cuts

In 2019-20 we have continued to maximise the potential of our Customer Relationship Management (CRM) system to deliver improvements for our customers.

There are times when we have to turn off our customer’s power to undertake essential maintenance or repair work. Our communication during these planned power cuts has been a key improvement opportunity, with our customers telling us they wanted more information and communication ahead of and during the outage. As a result of this engagement, we have implemented CRM Go to make sure that our customers know what’s happening at each stage of the works.

What does the system do?...

Letter issued: 10 days prior

— When a planned power cut is scheduled by our engineering team, the CRM system takes over in making sure that customers know a planned power cut is going to happen, why it is happening and what we can do to offer more support to vulnerable customers who will be affected.

Digital reminders: 72 hours and 24 hours prior

— After providing customers with a letter, we then send a digital reminder 72 and 24 hours before the power cut to try to make sure it doesn’t come as a surprise and enable customers to make their own plans.

Digital reminders: On the day

— We keep customers informed, using text messages and emails triggered by the team who are undertaking the work.
— This means we’re able to inform the customer that our team has arrived on site to begin work and also allows us to confirm when the power is going off and subsequently when the power has been restored.
— Sometimes things don’t go according to plan, and the power needs to be off longer than expected. If this does happen, we let customers know as soon as possible including the reasons why and for how much longer the power cut will last.

Survey: Post power cuts

— When the power is restored, the system allows us to ask customers to let us know how they feel about the service they received so we can see if there is anything else we can, or could do, to make the experience better in future.

4. Innovation

Our engagement...	What our stakeholders said	What have we done...
We worked with Local authorities and IT partners to develop a more effective solution to providing budget estimates.	Potential users made numerous suggestions to tailor the self-service design tool to their needs.	We incorporated these improvements as we developed the tool and continued to seek feedback on the usability and usefulness of the tool through the development process...
As part of our routine engagement we met a stakeholder and discussed the benefits of using smart meter data.	There was an opportunity to change voltages at customers’ homes, by monitoring and optimising this to reduce electricity usage.	As a result, we Initiated an innovation project using smart meter data to improve voltage control and reduce unnecessary energy use... (See page 38 for more info).

“Innovation involves identifying challenges and opportunities for our business and collaborating with stakeholders to seek solutions through new approaches.

Faced with decarbonisation our industry is undergoing its most significant transformation in decades. We seek to innovate across all areas of our business, but the most pressing need – and the greatest opportunity for benefits – is in three key areas: decarbonisation, for a low carbon energy system; reliability and resilience for a dependable energy system; and value for money, for an affordable and fair energy system.”

Iain Miller
Head of Innovation

Innovation is enabling us to creating a smart, flexible and fair energy system.

Our priorities

— Innovation in our business is a fundamental part of continually improving the quality and value of our services for our customers. It is also vital to respond to external changes and emerging risks.
— Our innovation priorities areas in ED1 so far have been focused on:
  – developing a smarter and more flexible power grid;
  – delivering benefits from smart meters;
  – continuing to enhance web-based and digital services; and
  – addressing issues of affordability.
— For the remainder of ED1, preparing our network for decarbonisation becomes increasingly important, whilst ensuring that we continue to support our vulnerable customers on this transition

How we've done in 2019-20

— Our innovation takes place as part of our day-to-day operations and through projects with specific regulatory funding.
— In the year, we self-funded a range of innovation activities including projects to reduce network losses and rolling-out machine learning.
— We also spent £3.5m across 32 dedicated innovation projects (95% of our Network Innovation Allowance).
  – We have three externally funded projects[1] in progress and we jointly bid for a successful collaborative Network Innovation Competition project 'Reliability as a Service' with SSEN that aims to use to maintain supplies to customers after higher voltage networks are unavailable due to faults.
— We have continued to invest in developing our innovation partnerships to keep us at the forefront on innovative thinking. We have strong relationships with Russell Group academic research institutions, such as Newcastle University; with businesses such as Smarter Grid Solutions; and customer interest groups including National Energy Action.
— We also work closely with our sister companies in the Berkshire Hathaway Energy group to share our ideas, collaborate to develop innovative solutions, sharing international best practice.

Supporting the decarbonisation transition

— Since the start of ED1 the focus of our innovation priorities has increasingly shifted towards techniques to support reliable, low carbon, Distribution System Operation (DSO).
— In 2019-20, we invested a further £10.7m as part of our £83.4m 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. In 2019-20, we launched our Boston Spa Energy Efficiency Trail, to understand if smart meter voltage data can be used to dynamically shift voltage and minimise customers' energy use in the long term.
— Our Distributed Storage and Solar Study (DS3) project is demonstrating 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.

Digitalising our network for our customers

— Making more open data available for our customers and using enhanced data analytics in our services is key to enabling the low carbon transition.
— In January 2020, we launched our award winning Autodesign, self-service design tool that provides customers looking to connect electric vehicle (EV) chargers access to high-quality designs, in real-time, at lower cost. [See page 34 for more detail].
— We have also continued to upgrade the quality of our customer service by rolling out further online web-chat channels and text message updates to customers across all of our key service lines.

Supporting our vulnerable customers

— Consumer vulnerability is a key priority for our stakeholders and continues to rank highly in our consumer surveys, alongside reliability.
— Our SilentPower project, providing vehicles with batteries to customers in a power cut, completed in 2019-20. It enabled us to support a pharmacy with a power outage in the early stages of the COVID-19 lockdown with clean efficient battery power. We will look to integrate these vehicles into our regional restoration plans in the remaining years of ED1.

Looking ahead

— Our aim is to smoothly transition innovation into business as usual. Such projects include our silent power vehicles, Foresight – our LV fault prediction tool and our self-healing cable polymer additive to reduce oil leaks from underground cables.
— As we look towards ED2, our innovation programme is increasingly focused on solutions that facilitate an affordable and justified decarbonisation transition, both through BAU projects enabling incremental improvements for customers, and through strategic funded projects.
— A particular focus is on the decarbonisation of transport beyond electric vehicles and we are developing partnerships in the rail sector to facilitate this.
— We are also increasing our focus on harnessing data to deliver cost savings and improve and broaden the services we deliver to you.

[1] E4Future with Innovate UK; Gendrive with United Kingdom Research; and Innovation and Barnsley Domestic DSR with Department for Business, Energy and Industrial Strategy.

An overview of some of our innovation projects.

Safety

ARC flash work wear

We have invested in innovative protective work wear to reduce serious injuries from electrical discharge. It provides four times more protection when compared to standard overalls. To date, this technology has helped to defend at least seven colleagues from the harmful effects of accidental flashover of electrical equipment.

Other projects

Centralock Increasing security at our substations.

Vehicle telematics Improving driver safety.

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

Reliability & Availability

Foresight

Our Foresight fault prediction project represents a revolution in LV cable fault management. So far, the project has made hundreds of thousands of pre-fault identifications prior to them becoming permanent faults. We are learning more about how to use this equipment and our understanding of cable behaviour is improving. Our ultimate aim is to use this technology to target network repairs before faults occur.

Other projects

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

CNI Implementing critical infrastructure to defend against the increasing threat of cyber-crime.

Customer Satisfaction

Silent Power

Our electric response vehicle, equip 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 the diesel-powered generators that can absorb power as well as generate, which is critical in a world where consumers with solar power are becoming more active participants in power and flexibility markets. See case study on page 25.

Other projects

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

Social Obligations

ACE

We developed a mobile gaming app to actively engage communities to make changes to how and when they use electricity, awarding prizes based on savings or changes to energy usage. Our findings showed that there is direct correlation between the use of smart technology and changes in customer energy usage.

Full details can be found here
npg-ace.com

Other projects

Resilient Homes Exploring domestic battery solutions for ensuring that medically electrically dependent customers remain on supply if a fault occurs on the network.

Connections

Auto Design

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. [Case study on page 34].

Other projects

Voltage reductions Providing additional capacity for multiple small scale generators to connect to our local network.

Environment

DS3 – Distributed Storage & Solar Study

Our ground-breaking trial to demonstrate how home energy storage and solar PV can save customers money and reduce network constraints. We have installed 40 smart batteries in homes with and without solar panels and expect this solution to reduce residents' energy bills, enable more solar panels to be installed without upgrading the local network, and potentially save millions in the cost of running the UK's electricity system.

Other projects

Self-healing cables Reducing cable fluid leakage.

PFT tracers Speeding up cable oil leak detection.

Our innovative electric vehicle with on-board energy storage, restores power to our region during a power cut more quickly and cleanly than traditional diesel generators.

We have developed an electric vehicle with an on-board energy storage system which replaces noisy and polluting diesel generators. The innovation project, Silent Power, quickly and cleanly restores power to homes and businesses during a power cut or essential maintenance work, providing real benefits for customer during the RIIO-ED1 period. We have developed the vehicle collaboratively in conjunction with Hyperdrive Innovation and Offgrid Energy.

The vehicle can quietly power up to three homes, a small business or a small community centre, with just one van, for 24 hours – even longer if the homes have domestic solar generation. The vehicles replace diesel generators which cannot be used on homes that export as well as consume power. Large and cumbersome diesel generators can also have access issues as well as causing air and sound pollution. Silent Power is a quieter and cleaner alternative to enable us to reach more customers-in-need. The electric vans' lithium ion batteries are silent during operation.

Our Silent Power vehicle in action...
In March 2020, a local pharmacy in South Shields, South Tyneside was able to benefit from the Silent Power innovation which saw the van connected to get the lights back on, whilst a team continued with repair work to restore power supplies to the local area, after a fault on the underground network. The power cut occurred during the early stages of the COVID-19 pandemic and national lockdown which was already a particularly challenging time for the local business.

"We've been extremely busy over the last few weeks, due to the COVID-19 pandemic with lots of people coming in for medical supplies, so it was vital to get the power back on as quickly as possible. The team from Northern Powergrid were great and it's exciting to know that we're one of the first businesses to have our power restored by the new Silent Power vehicle. It parked up outside of the Pharmacy and was connected quickly and easily and before we knew it the power was back on and we could get back to serving our customers."

Joanne Neil
Pharmacist and owner of Neil Pharmacy

5. Social Obligations

Over 1 million
proactive contacts with priority service register customers

129,245
vulnerable customers directly supported in 2019-20

89.7%
satisfaction for planned and unplanned power cuts in 2019-20 for our priority service register customers

Our engagement...
As part of our annual stakeholder summit, we engaged with over 100 external expert stakeholders, exploring the challenges our customers are facing, so that we can adapt and improve our support programme for vulnerable customers.

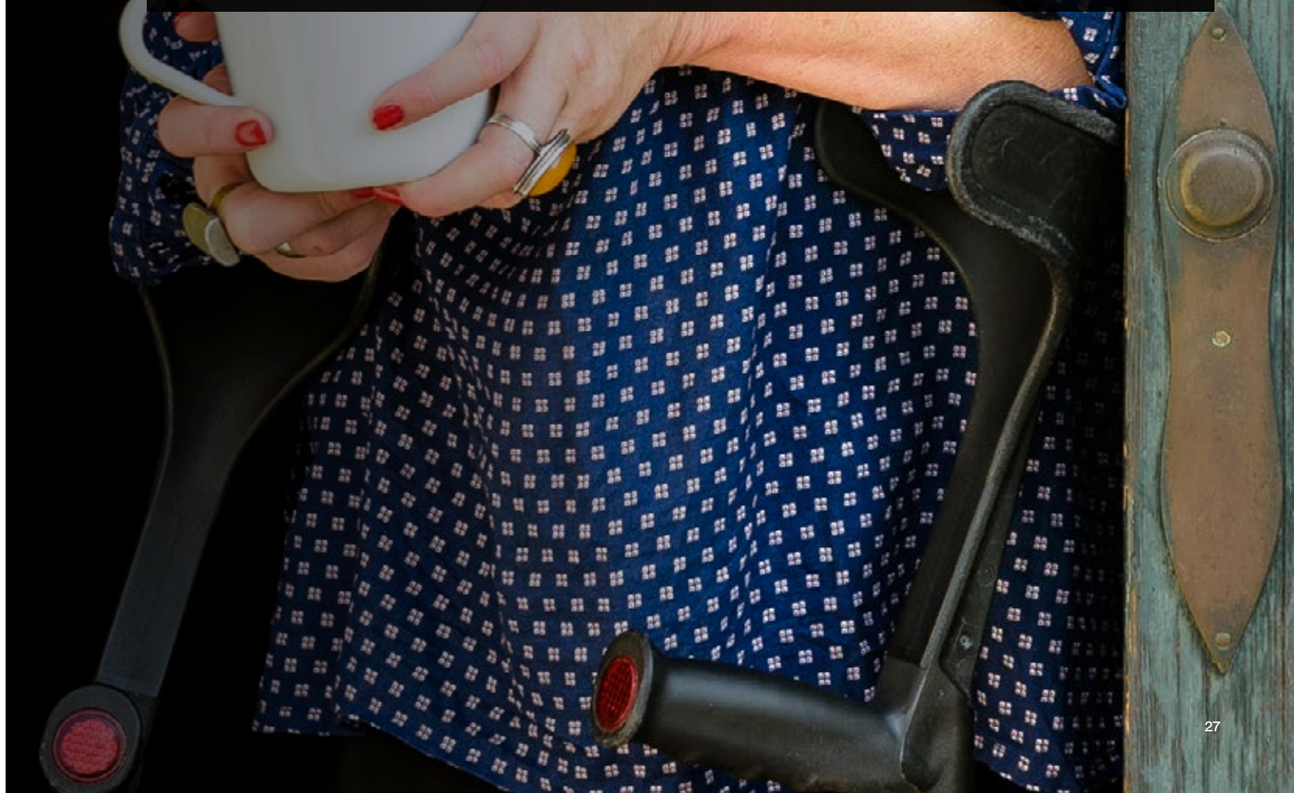
What our stakeholders said...
We needed to improve brand awareness via partners and improve visibility.

We should have clearly defined routes to provide support.

There needs to be more collaboration with new and existing partners to increase awareness of the services we offer and improve referrals to our Priority Services Register.

What have we done...
We committed to running the conference annually and will engage and collaborate with other utilities to broaden awareness of our services.

We have developed greater collaboration with Local Authorities and commissioned fuel poverty research to ensure we reach as many of our fuel poor households as possible.



Our fuel poverty programme has seen a 280% increase in energy saving services installed in customers' homes and delivered £1.7m in financial benefits to customers in 2019-20.

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.**

How we've done in 2019-20

— 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 2019-20, we were placed third against our peers.

Priority Services Register

— To best help our vulnerable customers, we need to know who they are and what their needs are. This enables us to engage with them in the right way and offer tailored services that best suit their needs.
— We continue to refresh our Priority Service Register (PSR) to ensure our records are accurate. A total of 228,000 PSR records have been updated and improvements to our central management systems now enable our staff to update PSR records following every interaction with customers.
— In the year, we completed a strategic PSR campaign to identify, target and recruit individuals with additional physical and mental health needs who are underrepresented due to either the nature of their vulnerability or additional needs. The number of customers who registered grew to 936,000 in 2019-20 – an increase of 4%.
— We also conducted research into barriers and challenges of engaging with our PSR and as a result we are launching the Priority Services Register as a membership club. From the engagement we carried out, some stakeholders did not want to be added to the register due to perceived 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.

Partnerships

— We continue to build on our existing partnerships and to establish new ones as part of our consumer vulnerability strategy.
— In March 2020, we held a conference with over 70 attendees from various organisations including Citizens Advice, local authorities, third sector, public and private sector organisations. An outcome of this is that all attendees are now promoting the PSR via their engagement with customers.

Supporting our most vulnerable during a power cut

— A key part of our strategy is to offer support services to our most vulnerable customers during a power cut.
— During a power cut, whenever a PSR customer calls, they bypass our Interactive Voice Recognition (IVR) system and get straight through to an agent. In 2019-20, we saw satisfaction from PSR customers remain high at an average score of 89.7%.
— In 2019-20, we deployed our innovative SilentPower vehicle which uses an on-board battery to promptly provide a temporary power supply during a power cut. This is a green and quiet alternative to traditional diesel generators and we are exploring further opportunities for how this can be used on a more widespread basis on our network to support more vulnerable customers.

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.
— In 2019-20, we invested in data to understand the number of people in our region experiencing the impacts of fuel poverty which is often compounded by multiple vulnerabilities. Our flagship fuel poverty programme has seen a 280% increase in energy saving services installed in customers' homes and delivered £1.7m in financial benefits.

COVID-19

— As a key infrastructure provider in our region, we have played a key part in supporting those impacted by COVID-19. We worked in partnership with the government, NHS, Local Resilience Forums and agency partners to connect two new Nightingale hospitals – Washington in our North East licence and Harrogate in the Yorkshire licence.
— Our ED1 programme upgrading electrical connections in high rise tower blocks has been impacted by COVID-19. We are reviewing our programme that is addressing 440 buildings in light of social distancing and safe working measures.

Looking ahead

— The impacts we are seeing as a result of COVID-19 are profound. That why it's more important than ever to ensure that we provide support to those in our region who need it the most.
— Our partnerships with Local Authorities are growing and in 2020-21, we will be putting in place data sharing agreements to help drive more collaborative working.
— Our ways of working are adapting, including the use of our SilentPower vehicle to provide support during power cuts and mobilising our support vehicles in a COVID-secure manner.
— Following engagement in 2019-20, we will be re-launching our newly branded PSR membership club with a targeted communication campaign in December 2020.

Our business plan commitments

Commitments	Status	Forecast completion
5.1 Route calls from Priority Service Customers 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 Register 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 Customers	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	2020-21
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 (due to 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, thanks to partnering communities fund in collaboration with Northern Gas Networks.

£1.7m
benefits delivered from our Fuel poverty programme

Our performance measures[1]	2018-19 actual	2019-20 actual	2019-20 target	Annual Status	ED1 target	ED1 status
Stakeholder Engagement and Consumer Vulnerability score (&ranking)	7.01 (3rd)	6.71 (3rd)	8.00 (2nd)	Missed	8.00 (2nd)	Recoverable
Power cuts Customer satisfaction (PSR)	90.6%	89.7%	85.0%	Achieved	93.0%[2]	Ahead
Power cuts Restoration within 6 hours	95.5%	95.4%	95.0%	Achieved	95.0%	On Track
Power cuts Restoration within 9 hours	98.1%	98.0%	98.0%	Achieved	98.0%	On Track

[1] Targets and status assessments reflect ED1 business plan target unless otherwise stated.
[2] Stretch target.

Providing support during COVID-19

We reached out to our charity partners in March 2020 in order to learn more about how we could redeploy our resources to support them in such a difficult period. They told us that they would welcome increased support from volunteers – in particular because our volunteers have been 'pre-screened', saving them time and crucial resources.

We worked with 34 community charity partners to assess their volunteering needs, and as a result we were able to redeploy 75 colleagues to directly support the work of these charities. This included apprentices, whose training had paused due to the COVID-19 restrictions. Our colleagues supported in various ways, including food parcel delivery to shielding households and engagement with customers at risk of extreme isolation and loneliness. Our colleagues delivered 1,899 hours of volunteering during their deployment. All of our colleagues who participated have fed back an increased morale and satisfaction with Northern Powergrid, outlining a desire to continue to volunteer with the assigned charity.

As a result we are exploring more formal volunteering partnerships with many of the organisations we supported and all are actively promoting our support services, including our Priority Service Register, to their beneficiaries.

Supporting our communities

In 2019-20 we extended our **fuel poverty services** with growth of our NHS trust partnership and the initiation of key partnerships, including the Yorkshire Fire Service and Affordable Warmth Hull. We have also undertaken a review of our partnerships, to ensure we have sufficient support schemes in place across our six operating regions in line with the vulnerability demographic.

Our flagship **Powergrid Cares programme**, in partnership with Citizens Advice, provides direct interventions and instant financial benefits to our customers. Advisors offer support to manage fuel bills and debt, this includes benefits checks, income maximisation, relationship issues and more. In 2019-20, the programme has seen a 280% increase in energy saving services installed in customers' homes and delivered over £1.7million in financial benefits..

In Newcastle we were told by local NHS services that GPs are regularly asked for **financial support** – often energy related and this led us to engage with Citizens Advice Newcastle to run a pilot project offering energy focused drop in sessions in GP surgeries. This outreach programme has so far reached around 30 individuals per week and subsequently led to referrals from agencies such as Action for Children, Shelter, Newcastle West End Food bank and Local Authorities.

6. Connections

27%

reduction in small works lead times (Compared to our ED1 business plan baseline)

15, 500

new connections per year

99.85%

guaranteed standard success rate for quotations issued to our medium and large connections customers – only 1 failure in the year out of 1,145 quotes issued.

Our engagement…

We launched AutoDesign at our Local Authority Forum in Jan 2020.

What our stakeholders said…

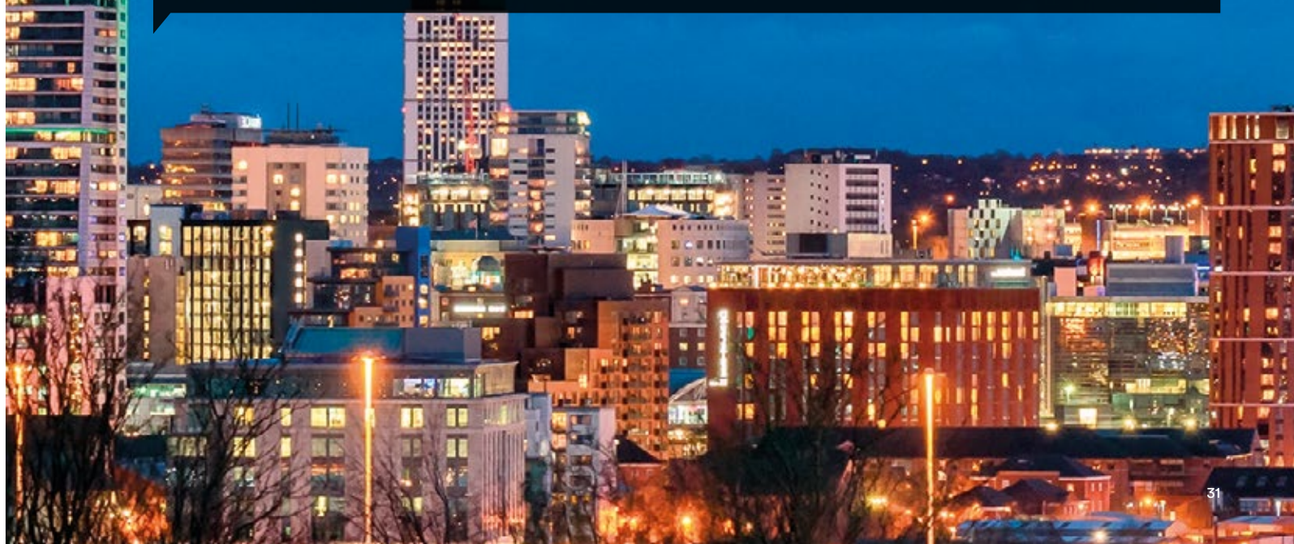
Local Authority stakeholders told us they would benefit from a forum where they could come together with other local government representatives to share their experience, discuss emerging challenges and access support and advice from NPg.

What have we done…

We delivered three forums in the 2019-20 year. We will continue to host these sessions throughout 2020-21 and build on what we are learning to make this a valuable engagement for stakeholders. For example, our October 2020 forum will be jointly hosted with Northern Gas Networks, giving stakeholders the opportunity to engage with two network operators in our region.

"The launch event provided a valuable opportunity to test AutoDesign using real-life locations and scenarios. Cost and availability of power are two vital considerations when undertaking EV planning and AutoDesign will be an essential tool in streamlining what was previously a lengthy process. It was also useful to discuss the challenges of EV charging with both Northern Powergrid and our fellow local authorities. Understanding EV plans for the region will help us realise our ambitions to introduce a number of EV charging hubs across the Tees."

Ann Wilson, Strategic Freight Advisor, Tees Valley Combined Authority



In 2019-20 we delivered our best-ever connections customer satisfaction results.

Our commitments

— **So far in ED1 we have already delivered on five of our six connections commitments, and we're on track to meet our headline connections commitment to reduce routine small works connections lead times by 30% in ED1. We took a big step forward in our customer satisfaction in the year, delivering door step quotations for our small works customers and implementing further self-service technology in the form of our award winning AutoDesign budget estimate tool.**
— **It was a fifth consecutive year of delivering on our commitments for medium and large works customers, with more engagement, the completion of all 13 of our Incentive on Connections Engagement (ICE) plan actions and another zero ICE penalty outcome from Ofgem. We also extended the coverage of Active Network Management (ANM) schemes in our region.**

How we've done in 2019-20

Small works

— This year, we hit a new high on small works connections customer satisfaction with a score of 88.4%, outperforming our ED1 target of 85% by 3.4 percentage points.
— This was thanks in part to the implementation of our 'quote on site' service launched in August 2019 which allows us to work through the quotation process on site with our customers providing same day quotations.
— Ofgem's targets for the average time it takes us to quote and deliver a small works connection were tightened as part of a mid-period review for the second half of the eight year ED1 period.
— For delivery, our regional operating structure enabled us to achieve both of the Ofgem targets in 2019-20 which were reduced by 7% for LVSSA and by 9% for LVSSB customers (connections for up to four plots).
— For quotations, we missed both of Ofgem's time to quote targets in 2019-20 which had been shortened by 41% for LVSSA and 33% for LVSSB. That said, increasing numbers of our customers are requesting site visits, which extends lead times, however we are seeing best-ever customer satisfaction scores as a result.
— We launched our award winning budget estimate tool, AutoDesign, in January 2020. This web-based, self-service design tool provides customers with a budget estimate within 10 minutes (compared to up to 10 days previously). The tool provides estimates for new connections up to 210kVA, including large single loads such as EV chargers, commercial or industrial properties and small to medium housing estates up to 100 homes.

Medium & large works

— We have successfully delivered all 13 actions in our ICE plan including improvements to the free of charge connections surgery service we offer and the introduction of a new end-to-end process that allows accredited ICPs to undertake overhead street lighting transfers as contestable works.
— For 2020-21 we have set a further 17 actions and will be adding a further one in October, including enhanced engagement with Community Energy groups for new connections, specific workshops to look at the decarbonisation of transport and heating and targeted actions intended to accelerate the uptake of low carbon technologies.

Capacity

— We continue to develop our customer-led smart grid. A key part of this is assessing the capacity of our network and publishing generation and demand availability through our heat maps to make sure that customers know where they can potentially connect low carbon technologies (LCTs) such as solar panels and electric vehicles, at as low a cost as possible.
— We have also improved interactive generation and demand heat maps that allow customers to assess information on available capacity on our network. The data which underpins the heat maps complimented by our Long Term Development Statement and on-line access to our iSmart[1] system, customers can build their own portfolio of information to use in decision making.
— Active Network Management areas are enabling us to maximise network capacity in a real-time environment and reduce reinforcement costs. In addition to the four sites that were enabled in 2018-19, this has been extended by a further two sites.

Competition in connections

— We are committed to supporting competition in connections. Our connection input services team continued to streamline our input services, allowing Independent Connections Providers (ICPs) and Independent Distribution Network Operators (IDNOs) to compete more freely. We have supported this by running workshops providing information and support for ICPs and IDNOs, strengthening our fully independent quality assurance audits for all connections to our network regardless of who carries out the work and where an ICP or IDNO lacks sufficient accreditations to carry out work, we offer to do it for them.

Looking ahead

— For the remainder of the period we will continue to strive for reductions in our connections lead times, to hit our 30% commitment, whilst improving the quality of service we offer.
— We will look to embed an expanding range of service offerings for low voltage quotations within our AutoDesign solution saving save time and cost whilst increasing the quality of our service.
— We will continue expanding our range of interactions with Local Authorities, primarily around the areas regarding EV's and their strategies for roll out across public car parks and shared/residential parking spaces; together with the use of our network information surrounding network utilisations i.e. heat maps and also local area investments.

Our business plan commitments

Commitments	Status	Forecast completion
6.1 Reduce end-to-end connection timescales for small works by more than 30%	On Track	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

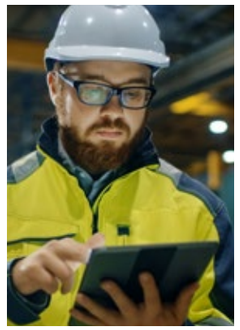
Going beyond our plan

Customer Satisfaction: we are forecasting a 13.3 percentage point improvement in connections customer satisfaction in ED1 (relative to the start of the period)

>92%

We gave customers the ability to be quoted on site for small works from August 2019

Quote on site



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 the enduring solution for all LV connections

Autodesign

Our performance measures[2]	2018-19 actual	2019-20 actual	2019-20 target	Annual Status	ED1 target	ED1 status
Connections (BMCS) – Overall	84.9%	88.4%	85.0%	Achieved	92.5%[3]	Ahead
Connections (BMCS) – Quotations	85.0%	88.5%	85.0%	Achieved	92.5%[3]	Ahead
Connections (BMCS) – Delivery	84.7%	88.1%	85.0%	Achieved	92.5%[3]	Ahead
Average Time to Quote (LVSSA)	6.6	7.3	4.8	Missed	4.8[4]	Recoverable
Average Time to Quote (LVSSB)	13.8	14.1	7.8	Missed	7.8[4]	Recoverable
Average Time to Deliver (LVSSA)	41.3	38.8	39.3	Achieved	39.3[4]	On Track
Average Time to Deliver (LVSSB)	49.1	46.9	47.9	Achieved	47.9[4]	On Track

[1] Our graphical information system tool – a comprehensive view of our network data and mains records.
[2] Targets and status assessments reflect ED1 business plan target unless otherwise stated.
[3] Reflects a stretch target.
[4] Revised regulatory incentive targets tightened by Ofgem for the second half of ED1.

AutoDesign – Our self-service low-voltage connection budget estimate tool

Our innovative, free to use and national award winning self-service tool (AutoDesign) reduces the time to get budget estimates for low-voltage connections from 10 days to just 10 minutes. It provides our customers with accurate real-world information and improves the experience for those looking to connect to our network.

The electrification of transport is a vital part of society's decarbonisation. Our AutoDesign tool is particularly useful for customers exploring the connection of electric vehicle charges, helping to drive the transition to a net zero future across our region. The tool provides greater transparency around network capacity, clearly indicating all possible and the most cost-effective locations to install EV charges.

Our plan is to develop AutoDesign into a 'one stop shop' automated low voltage design tool, incorporating load and generation network data. We will engage and collaborate with key partners, including low carbon technology installers and Local Authorities, as part of this next phase to ensure we deliver the best solution for our customers.

Stakeholder feedback/verbatim

"From chatting to some of the team at Northern Powergrid who were developing the tool, we stayed in close contact with them. I've been involved in delivering projects for more than 40 years but could already see there was fantastic potential in something like this to help rural communities secure new connections more easily."

"From there, we were then able to start using the tool when it was launched in January 2020 and we were incredibly impressed with its capabilities. At that early stage I could already tell that it was a game-changer for new LV connections."

"I also found Northern Powergrid to be really supportive and very responsive to our questions and suggestions whilst they were developing the tool. The engineers at Northern Powergrid have always been easy to contact by telephone and the answers they have provided are always helpful and constructive."

"During the enforced lockdown as a result of COVID-19, we've been able to put the tool to great use and have evaluated around 250 potential sites as part of the SOSCI project".

Kevin Wood
Team Leader at Cybermoor

7. Smart Energy

6
additional sites identified for Active Network Management

£24.3m
investment in ED1 to date on our Smart Grid enablers programme

100MW
of flexible connected capacity tendered in eAuctions in 2019-20

Our engagement...
Local Authority planners asked us for more support when identifying the most cost-effective connections solutions for new developments.

What our stakeholders said...
They were encountering developers who tell them that they cannot integrate low-carbon technologies, such as new EV charging points, into their plans because the connections costs are too high.

What have we done...
To support Local Authorities in achieving their low carbon ambitions and developers in identifying the most cost-effective connections options, we will offer pre-application surgeries. During these sessions, our engineers will work with both parties, review their plans and work with them to identify the most viable and cost-effective connections solutions.

We will be contacting the planning teams in all the Local Authorities in our region to make them aware. We will also be identifying consultants, house builders and developers who we think might benefit and contacting them with an invite to make use of this free service.

"Pre-application surgeries will help when it comes to working with developers on EV charge point installations. We have struggled in the past with developers claiming viability concerns for EV charging and so to have an opportunity to discuss this issue on an open platform will be very useful."

Rebecca Cockburn, Hartlepool Borough Council

"Pre-application surgeries between local authorities, house builders and developers will enable us to progress planning and development strategies more efficiently. It would be beneficial to have similar surgeries with all utilities as well as just Northern Powergrid."

Paul Muir, Sunderland Council

We're continuing to make progress with our smart grid enabling investment programme and have made positive steps in developing flexibility options on our network.

Our commitments

- **Our smart energy commitments are enabling us to lay some of 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 £83.4m smart grid enablers programme in ED1 is central to our plan to unlock a low carbon future and ensure a smooth transition to the role of Distribution System Operation (DSO).**

How we've done in 2019-20

Smart grid enabling investment

- In the year we invested £10.7m in smart grid enablers, taking our total spend in ED1 to £24.3m[1]. As part of this programme we have 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 has also slowed delivery compared to our original plan.
- Our ED1 business plan envisaged £52m of additional smart grid reinforcement would be required on the network. This level of investment has not yet been required as we have seen a lower uptake in low carbon technologies (LCTs) than forecast in our plan so far. 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).
- During the first half of ED1 we have replaced more than 13,000 of these at a cost of over £12m. We're also freeing up capacity on our network through voltage reduction at our major substations. This has released 3.2GW of capacity in the ED1 period to date.

DSO and our engagement

- We updated our stakeholders on our approach to deploying customer flexibility when we published our DSO strategy v1.1 in October 2019. This set out what we were doing to roll-out flexibility in the near- and medium-term. Our approach, in close collaboration with the Energy Networks Association Open Networks project and flexibility providers, is to seek opportunities to deploy customer flexibility to maximise efficient use of the network for three key use cases: deferral of traditional reinforcement, planned maintenance, and emergency support.

Flexibility

- During 2019-20, we ran our first e-auction for emergency support customer flexibility. This resulted in no services being procured as the market feedback was that there was insufficient value in this product where the use is uncertain. Instead, it is being viewed by flexibility providers as an additional product that could be provided alongside the reinforcement deferral product that would provide a more certain revenue stream.
- Through the year, we have continued to look for opportunities for other use cases and flexibility needs. The absence of any new major reinforcement schemes has meant that there have been no procurement exercises for reinforcement deferral. Similarly, there have been no needs identified for planned maintenance where additional customer flexibility back up was required as a contingency to support construction works.
- Our flexibility work to date has provided meaningful lessons about the nascent flexibility market that are informing our future planning.

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.
- Our Driffield ANM system is in place and we have accepted customer connections for six further suitable areas, four of which are progressing through the engineering phase.

Smart meters

- At a national level, the smart meter roll-out programme continued to face technical issues and delays, resulting in lower than forecast connection of meters and a lack of the data we would see from these – this has had an adverse impact on how we can develop projects using the data.
- Further to this, we are still in dialogue with Ofgem on the approval of our Data Privacy Plans – another key enabler of our pursuit to deliver the benefits associated with smart meter data.
- That said, we have progressed with our internal readiness, having mobilised 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 increase our smart grid investment in the remainder of the ED1 period, mitigating as far as possible the impact of COVID-19 restrictions on delivery of the programme.
- In parallel we will progress the initiatives that are helping us manage the network in real time including Active Network Management and high voltage regulation. We will also work to minimise the impact of the lower than anticipated volume of fully functioning smart meters in our region, focusing on the limited 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	2022-23
7.2 Invest £52m in smartgrid network reinforcement that pays back by 2023 through avoiding £86m of traditional reinforcement – a net saving of £34m compared with traditional reinforcement methods	Behind (Due to 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	On Track	2021-22
7.5 Use smart meter data to optimise network investment and reduce losses	Behind (Due to external factors)	2022-23
7.6 Trial the potential for combining smart grids and smart meter data to provide additional information services	On Track	2021-22
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 measures	2018-19 actual	2019-20 actual	2019-20 target	Annual Status	ED1 target	ED1 status
Smart grid investment[1] (£m)	13.6	24.3	56.3	Missed	83.4	Recoverable
Smart meter intervention rate – Category A[2]	83%	83%	90%	Missed	90%	On Track
Smart meter intervention rate – Category B[2]	93%	91%	90%	Achieved	90%	On Track

433MW
of flexible capacity connected and in operation on our network

100MW
of flexible connected capacity tendered for at e-Auction in 2019-20

5
Active Network Management zones – 1 live and 4 with accepted offers

[1] Cumulative, 2012-13 prices.
[2] Defect rates are 3.61% compared with the Ofgem forecast of 2%. We resolved twice as many defects as forecasts.

Boston Spa – Minimising customers energy use and bills by optimising the voltage at their meter

Our Boston Spa Energy Efficiency Trial (BEET) was mobilised as a result of engagement with Keith Jackson, a Boston Spa resident with significant electricity supply industry experience, and the Policy and Markets team.

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 the customers uses 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 are expected to be between £40 and £50 per household per year, and overall 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.

Keith has now joined our Northern Powergrid stakeholder panel as a customer representative.

8. Distribution System Operation (DSO)

Our engagement...

We wanted to enable Small and Medium Enterprise (SME) decarbonisation

What our stakeholders said...

Our stakeholders were lacking a central repository of information that was hosted by a neutral party.

SMEs were looking for practical advice and specific carbon documentation.

What have we done...

We approached the federation of Small businesses (FSB) to find out how we can understand more about the specific needs of SMEs.

We've creating an easily accessible online tool to provide expert advice to SMEs. The tool will focus on practical advice and will be hosted by the FSB.

"Many of our local authorities have declared climate emergencies and there is significant appetite amongst local leaders in our region for aiming to decarbonise earlier than the Government's 2050 target. On the low carbon transition, we are increasingly undertaking the roles of a Distribution System Operator (DSO), meaning that we enable customers to be flexible with when they generate or use electricity, providing a market where they can sell energy when they don't need it and buy energy when they do need it. In doing so, we aim to encourage more low-carbon generation, reduce system costs and improve overall energy system efficiency for all customers – essential factors for fast and efficient decarbonisation".

Patrick Erwin, Policy & Markets Director, Northern Powergrid

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 as a Distribution System Operator (DSO) – a trusted and neutral platform able to optimise the whole energy system by connecting local buyers and sellers of energy; by incentivising customers to be flexible in their energy generation and consumption; and designing our network around the evolving needs of our customers on the low-carbon transition.**

There are a number of industry options for how elements of this role could develop in the future to make the whole system more efficient. We are engaging with our stakeholders and actively participating in dialogue with other industry players, Ofgem and Government on how this should be developed.

What we've done in 2019-20

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

Scoping DSO

— 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.

In our plan, we have explained how:
— We are getting ready for the increased uptake of electric vehicles and electrification of transport;
— We will support and embed flexibility;
— We will leverage our innovation portfolio; and
— Our smart grid enablers programme will set us up for the future.

Distribution Future Energy Scenarios

— In December 2019 we published our Distribution Future Energy Scenarios (DFES). We took National Grid'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.

Getting on with it – Making progress with the transition

Flexibility first

— We believe that a key part of becoming a DSO is active participation in developing a market for flexibility. This means giving all of our customers the opportunity to play an active part in the energy system by using their energy resources to support the network when we need flexibility.
— We are doing everything that we can now to identify opportunities for using customer flexibility in managing our network today, choosing flexibility where it is the most cost-effective option. If we can avoid or defer network reinforcement by using customer flexibility then we will do so, but if reinforcement makes more economic sense then we will ensure that our investment decisions are the lowest cost options for our customers over the long term.
— Alongside developing the market for flexibility we are developing our people, processes and systems to enable us to promote and operate flexibility services. An example of this is our partnership with other DNOs on the Flexible Power project, a system which gives flexibility providers a direct path to participate in flexibility on multiple networks.
— We published our Emerging Thinking on our ED2 business plan in September 2020. In it we have laid out how a "flexibility first" mind-set is at the heart of our decarbonisation investment planning. This involves prioritising initiatives and investment that 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.

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 – an electric vehicle with an on-board energy storage system [Innovation, Page 26].
— Boston Spa Energy Efficiency Trial [Smart Energy, Page 38].

Building new capabilities – Laying the foundations

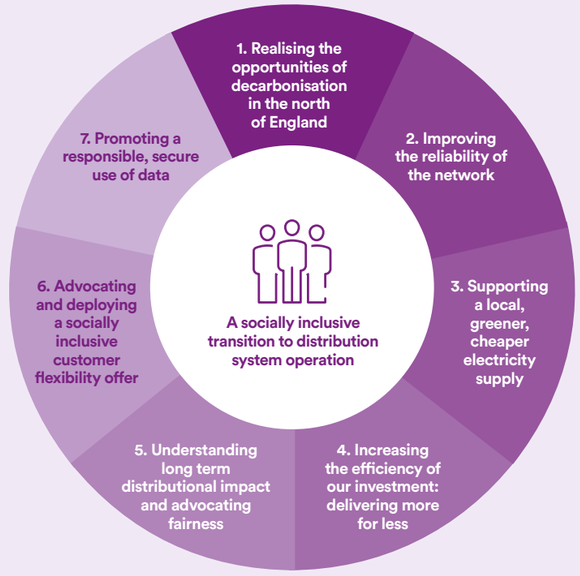
Smart grid enablers

Our £83.4m 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 £24.3m in ED1 to date on this programme.

Looking ahead

— Building on the lessons learnt from our flexibility tender processes undertaken in 2020, we will continue to progress our customer flexibility procurement programme, ensure our processes are neutral and transparent by sharing information and metrics. We will build on this further through the Flexible Power partnership, sharing knowledge and best practice with other DNOs.
— We will be publishing DFES 2020, 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 following our Emerging Thinking scenarios. These views of the future will be used to inform our DSO planning for optimising the use of flexibility on our network.

Our seven themes for a socially inclusive DSO



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 increase.

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 undertook specific engagement with local authorities and other regional parties on our 2019 Distribution Future Energy Scenarios. This engagement will inform our updated DFES in for 2020.
- 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 Autumn 2019, the Customer Engagement Group has been a key part of scrutinising our Emerging Thinking on our ED2 business plan, published in September 2020. A significant part of our planning is focused on preparing our network for decarbonisation and transitioning to a DSO is integral to this transformation of the whole energy system. The Customer Engagement Group will help ensure that Northern Powergrid's business plan for the 2023-28 regulatory period has properly addressed the needs of the eight million people across the communities we serve on the transition to a low-carbon economy.

Planning for the long-term starts now

- Our ED2 Emerging Thinking builds on the foundations of our DSO v1.1 strategy and we are using Emerging Thinking as a platform for extensive engagement with our stakeholder group on our ED2 plan.
- We are continuing to develop our DSO strategy into an implementation programme for ED2 whilst continuing with our ongoing smart grid preparatory actions and developing flexibility markets.

You can access our DSO v1.1 development plan, along with other supporting information by visiting;
northernpowergrid.com/DSO

9. Environment

44%
Business carbon footprint reduction
against our ED1 business plan baseline.

37%
Oil loss reduction
against our ED1 business plan baseline.

68.7km
removed from Areas of Outstanding Natural Beauty
in ED1 to date.

Our engagement...
We meet National Parks and Areas of Outstanding Natural Beauty stakeholders to discuss ways of reducing our impact.

What our stakeholders said...
Nidderdale Area of Outstanding Natural Beauty (AONB) and the National Trust have expressed their interest in enhancing the landscape at Fountains Abbey & Studley Royal World Heritage Site.

What have we done...
We're investing £1.25m to replace 8km of overhead power lines with almost 10km of underground cable, as well as building new ground mounted substations to supply the local community.

"The undergrounding work by Northern Powergrid will significantly enhance the experience of the 600,000 people who travel to this special place every year, from the UK and across the globe. Every day we carry out vital conservation work that takes us closer to our goal of restoring the garden to its eighteenth-century heyday and this fantastic project helps us to fulfil that ambition."

Sarah France, World Heritage Site Coordinator at Fountains Abbey & Studley Royal

Our environmental impact is reducing each year in line with our ED1 business plan commitments and we are taking positive steps towards low carbon operations.

Our Commitments

— **We are working hard to make a difference in our region with a balanced and measured approach across all of our environmental initiatives.**
— **2019-20 was another year of success, with all of our ED1 business plan commitments ahead of schedule. We have set stretch targets for Business Carbon Footprint, SF_6 losses, oil loss, cable replacement and undergrounding cables in Areas of Outstanding Natural Beauty.**

How we've done in 2019-20

Business Carbon Footprint – Overall

— One of our headline ED1 business plan commitments was to reduce our Business Carbon Footprint (BCF) by 10%.
— Our emissions in 2019-20 of 33,365tCO_2e represented a 44% reduction against our ED1 business plan baseline – a best ever performance.
— Key drivers of the year on year reduction include energy efficiencies from building energy usage (-8%) and a reduction in our operational transport (-18%).

Business Carbon Footprint – Sulphur Hexafluoride (SF_6)

— A key element of our BCF is managing the loss of sulphur hexafluoride (SF_6) to the atmosphere.
— SF_6 can be damaging to the environment if not managed correctly as it is 22,800 times more potent than CO_2 – this is why we made a specific commitment to reduce losses.
— Our 2019-20 performance of 63kg lost was 44% ahead of the targets we set in our ED1 business plan. That said, we know we can do more.
— We've continued to see the benefits of our thermal imaging camera which detects leaks in our switchgear and we are currently exploring whether there would be benefit of deploying a second one to further reduce losses.

Undergrounding in Areas of Outstanding Natural Beauty

— We care about the visual impact our network has, especially in Areas of Outstanding Natural Beauty (AONBs). Our stakeholders also see this as a priority area and following feedback, we stretched our programme to deliver 120km – an additional 20km and £2m investment.
— In the year, our programme saw the removal of a further 13.6km of overhead lines in AONBs, bringing our total to 68.7km in the period to date.
— The COVID-19 pandemic has impacted delivery of our programme in recent months due to restrictions on resources for our service providers. We are working to re-mobilise this work and expect our programme to restart in 2021.

Oil loss and fluid-filled cables replacement

— We're committed to reducing 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 2019-20 we lost 33,810 litres – that represented a 37% reduction, well ahead of our original target and keeping us on track to hit our stretch targets of reducing loss to ~28,000 litres.
— We also committed to replacing 133.6km of fluid filled cables by 2023 to reduce overall risk and we've outperformed that target this year, having removed 145.3km so far. In 2017-18 we stretched our target by an additional 72km and we are on track to meet this by the end of the period.

Losses

— Networks incur electrical losses when transferring power and although we've delivered on our commitment to factor this into a wide range of investment decisions, we are still busy with a range of activities to manage losses on our network as described in our losses strategy and recent losses discretionary reward tranche 3 submission. For example we have explored how batteries can impact losses via our own Rise Carr battery and with learning from some of our innovation projects DS3 distributed solar [see innovation page 25].

Looking ahead

— Although we have made significant progress in BCF reduction in ED1 so far, in June 2019 the Government set a legal commitment to achieve net zero carbon emission by 2050. We are therefore targeting net zero emissions from our own operations by this date at the latest.
— We will continue to make progress in the remainder of the ED1 period to set us on the right path for this, including the reduction of business travel by utilising remote working tools and techniques adopted as a result of COVID-19 restrictions to have a positive impact on our business mileage.
— On our AONB programme, we will manage the short term uncertainty caused by COVID-19 in respect of our delivery capability, and work closely with our service providers to deliver our programme.

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 Areas of Outstanding Beauty (AONB)	Ahead	2021-22
9.4 Replace 134km of fluid-filled cables and use Perfluorocarbon tracers (PFTs) to quickly replace leaks	Delivered	2019-20
9.5 Maintain SF_6 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

Undergrounding in AONB: We have set a stretch target for undergrounding in Areas of Outstanding Natural Beauty of 120km in ED1.

We have set a 49% stretch target for business carbon footprint reduction (against our original ED1 target of a 10%).

We have set a 47% stretch target for Oil Loss (compared to our original ED1 commitment of 15%).

We have set a 50kg stretch target for SF_6 loss – 62kg lower than our original ED1 business plan target of 112kg.

We have set a stretch target of 224.4km of fluid filled cable replacement – 68% more than our ED1 business plan commitment of 133.6km.

22.1km more | **49% less** | **47% less** | **50kg** | **90.8km more**

Our performance measures[1]	2018-19 actual	2019-20 actual	2019-20 target	Annual status	ED1 target	ED1 status
Business Carbon Footprint (tCO_2e)	35,673	33,365	56,869	Achieved	30,600[2]	Ahead
Oil loss (Litres)	34,314	33,810	48,681	Achieved	28,325[2]	Ahead
Overhead lines removed in areas of natural beauty (km, cumulative)	55.1	68.7	61.1	Achieved	120.0[2]	Ahead
FFC replacement (km, cumulative)	94.7	145.3	110.1	Achieved	224.4[2]	Ahead
SF_6 lost to atmosphere (kg)	65	63	112	Achieved	50[2]	Ahead
Environmental agency Incidents (count)	12	7	25	Achieved	7[2]	Ahead
Streetworks quality (%)	93%	93%	90%	Achieved	90%	On Track

[1] Targets and status assessments reflect ED1 business plan target unless otherwise stated.
[2] Reflects a stretch target.

Adapting to Climate Change: A strong response to flooding events in our region

During 2019-20, we experienced significant flooding events in our region, specifically in the Calder Valley, Lower River Aire and River Don areas.

Our teams worked relentlessly in challenging conditions to support customers whose properties were affected by flooding, in collaboration with multi-agency partners and the military to ensure that they were able to safely receive power. In these events, our investment in flood mitigation proved to be invaluable in protecting our substations for customers and we did not have any major electricity-related impact.

In the November 2019, our permanent flood defences at Rotherham prevented damage to a major substation which powers around 20,000 homes and businesses. In the lower Aire Valley, we had previously relocated a major substation out of the flood plain which was inundated, ensuring that it was protected during the significant flooding event. We also took precautionary measures and deployed temporary flood defences at two major substations in the Doncaster area.

10. Finance

£1m+

Invested in our network each day

748

New job opportunities created in ED1 to date

£80 per year

The average annual cost in 2019-20 prices – based on average domestic consumption of 2,900kWh

Our engagement...

In March 2020, we held a Future Fairness Conference which was attended by almost 100 delegates from over 60 organisations.

What our stakeholders said...

The priority of moving to DSO needs to recognise the impact this may have on vulnerable customers and those least able to pay.

What have we done...

We're undertaking a piece of research to better understand the most effective ways to communicate future changes to customers in language that resonates with their priorities and values. This will help to ensure future steps in the transition have a fair and socially responsible impact across demographics.

We're keeping true to our promise to deliver 'more for less' – controlling our costs in line with allowances whilst out-performing our business plan targets.

Our Commitments

— Our customers continue to place 'keeping bills low' amongst their top three 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 £80[1] (22p 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 2019-20, nearly 750 new employees have joined Northern Powergrid, 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.

How we've done in 2019-20

Costs and allowances

— 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 total expenditure has exceeded 96% of our total allowances in the ED1 period to date, with the gap to our 100% target primarily attributable to timing of our investments. Our ED1 cost forecasts continue to show that we expect to spend in line with Ofgem's allowances for the period as a whole.

Our people

— As one of the largest employers in our region, we took on 177 new recruits during 2019-20 including 92 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 1,200 job opportunities, exceeding our original target of 1,000 in ED1.
— In March 2020, we published our latest annual gender pay gap report which showed a gender pay gap of 21%.
— We want to see more women in technical and professional roles. To support this we have developed a key 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 build enthusiasm for Science, Technology, Engineering and Mathematical (STEM) subjects.

Taxation

— 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. We always expect to pay our taxes.

Our parent company

— 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

— The delivery of our planned investment programmes will bring our expenditure in line with our cost allowances by the end of 2022-23.
— We'll continue with our recruitment programme whilst remaining flexible to how the industry is changing and how this impacts what skills we need to be recruiting for, at the same time as seeking to build an increasingly diverse workforce.
— In June 2020 we raised funds from our first green bond and we will continue our Green Finance Framework which sets out an eco-focused strategy to support economic growth across our region. The proceeds will be used for investments that enable and support the take-up of low-carbon energy as well as lowering our environmental impact.

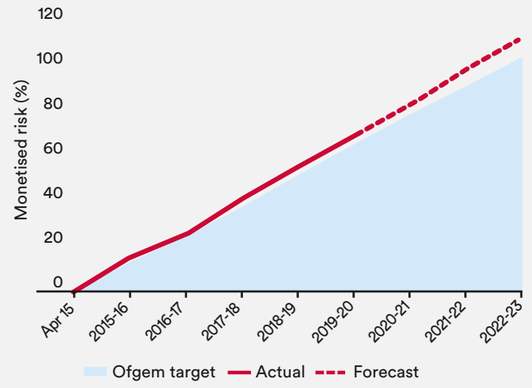
[1]Based on Ofgem average domestic annual consumption of 2,900kWh – bills in 2019-20 prices.

Our business plan commitments

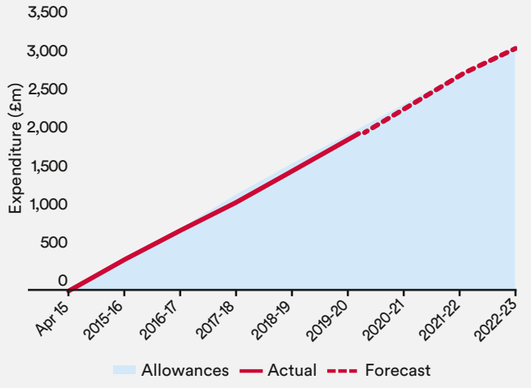
Commitments	Status	Forecast end
10.1 We will deliver an immediate 10% price reduction at the start of the period	Delivered	2015-16
10.2 We expect to create 1,000 job opportunities in the organisation during the ED1 period	Ahead	2021-22

Going beyond our plan

Cumulative network outputs vs. target



Total expenditure vs. Ofgem allowances



Our Regulated Equity (RoRE)
The Return on Regulated Equity (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 6.7% 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.

Northern Powergrid RoRE	Ofgem's notional gearing assumptions		Actual gearing	
	2019-20	ED1 forecast	2019-20	ED1 forecast
RoRE (Including Holdco debt)	6.4%	7.2%	5.8%	**6.7%**
RoRE (Excluding Holdco debt)	6.7%	7.4%	5.2%	5.6%
Northeast	7.3%	8.0%	5.5%	6.1%
Yorkshire	6.2%	6.9%	4.9%	5.3%

Green Investment Taskforce

The Energy Networks Association (ENA) has formed a Green Investment Taskforce to leverage the capabilities of networks to assist in stimulating a green recovery of the economy by accelerating vital investment in infrastructure.

While COVID-19 acted as the initial trigger for establishing the Taskforce, its focus extends beyond the pandemic-related recovery to include activity that will be crucial in ensuring the UK meets its net zero carbon emission targets and addresses climate change.

Networks can help deliver the green recovery by investing in infrastructure, creating jobs, boosting domestic supply chains, and ensuring that no communities are left behind. It is now much clearer that electricity will be the principal route for decarbonising personal transport and a significant, if not the primary, means of decarbonising heat. In response to Ofgem's request to look for ways to bring forward investment that will be needed to enable the transition, we have identified an efficient programme of work to enable a faster adoption of electric vehicles which we believe will deliver benefits to customers.

Our initiatives will focus on reinforcement of the low-voltage network where approximately £30m of investment will;

— enable ~20,000 customers across our North East and Yorkshire regions to adopt low carbon technologies;
— unlock the potential for participation in flexibility markets; and
— significantly reduce electrical losses on the parts of the low voltage network.

In parallel with this programme, we will continue with our £83m Smart Grid enablement programme – which when completed will enable us to better manage voltage across our network and to defer or avoid costly reinforcement investment at higher voltages whilst flexibility markets develop.

We will continue to work the Ofgem and the ENA on our near term proposals to stimulate economic recovery via further Green Investment.

Working near our assets

There are times when people need our help to work near or around our assets when undertaking their own projects. This ranges from individuals working on their homes to companies making big investments in new infrastructure.

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 wood 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.

Our objective

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

Our performance

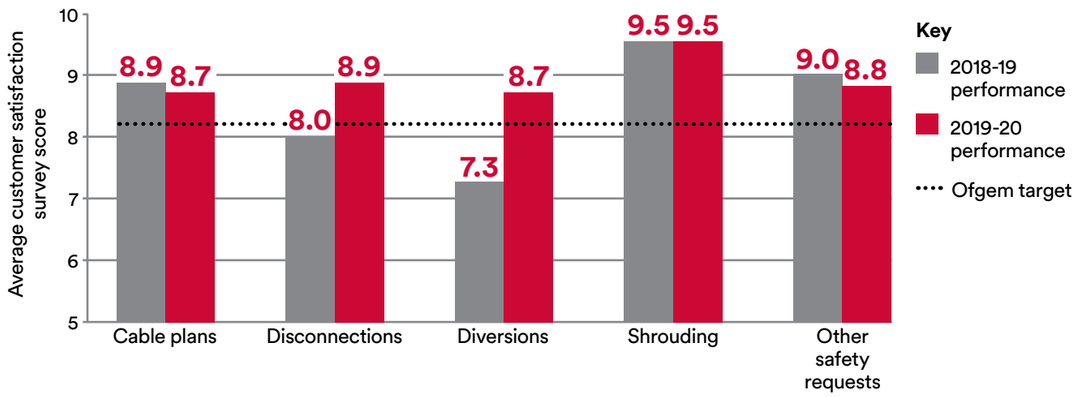
— Our improvement plans are in line with the commitments we made in our ED1 business plan – to make our services quicker, easier and more convenient for our customers.
— Those who need to work near our assets rated us across four major service lines: cable plans; disconnections; diversions; and shrouding.
— In 2019-20, our satisfaction scores in all areas were higher than the Ofgem targets. We saw a positive move in disconnections and diversions and a slight step back for cable plans.
— Disconnections improved to 8.9 out of 10 (+0.9 from last year) as a result of a greater emphasis on delivering against customer requested dates and times.
— We have invested in our IT systems to provide more opportunities for customers to use self-service to request cable plans. 88% of our customers now self-serve for cable plans with satisfaction at 8.7 out of 10.
— We also saw a significant improvement in satisfaction with our diversions work to 8.7 out of 10 (+1.4 from last year) as a result of enhancements to our online service enabling customers to book an initial survey and work date which has improved the timescales for customers. The improvements made also enable us to keep the customer better informed about progress of their job through the process. Along with this we use the feedback provided by customers to continuously look for opportunities to improve the service we provide.

Getting better at what we do

— We have just completed the roll-out of disconnections within our CRM system (2020-21 regulatory year). The aim of these enhancements is to offer an end-to-end, self-service application for the disconnection process.
— We have listened to customer feedback to tailor our application process and ensure customers are clear on end-to-end delivery timescales for their requested work, booking delivery dates at the point of payment. This will be supplemented by additional support through our key service providers to deliver work more quickly for our customers.
— In parallel with these system enhancements and enhanced working processes, we will also implement 'on the day' communications via text message to give customers notice of expected engineer arrival times.

Looking ahead

— In the balance of the ED1 period our focus will be to embed the processes and technology we have implemented thus far 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 service to further improve our customer communication approach.
— In parallel we are focusing on improvements in disconnections lead times – a key priority for our customers.



Glossary

Our performance snapshots on the inside front cover and on pages 54 and 55, 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.

Number of customers		Number of customers electricity is distributed to in Northern Powergrid's licensee areas: Northeast and Yorkshire.
Total DNO network length		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.
Customer interruptions	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, 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.
Customer minutes lost	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.
IIS – Incentive performance reward/ (penalty)	£	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 2021-22.
Network Output Measure (NOMs)		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.
Overall Broad Measure of Customer Satisfaction Score		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.
BMCS – Incentive performance reward/ (penalty)	£	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 2021-22.
Time-to-quote (days)		The average number of days from a connection application being received to a connection quote being issued for single low-voltage minor connections (LVSSA).
Time-to-connect (days)		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).

Incentive performance reward/ (penalty) – connections lead time	£	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 2021-22.
Incentive on Connections Engagement (ICE) penalty (if applicable	£	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 2021-22.
Stakeholder Engagement and Consumer Vulnerability (SECV)		Northern Powergrid's Stakeholder Engagement and Consumer Vulnerability (SECV) score and rank as part of Ofgem's customer satisfaction measure.
Incentive reward (SECV)	£	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 2021-22.
Unrestricted domestic tariff charge (for a typical domestic customer		The distribution element of the bill for an average domestic consumer in 2019-20, excluding the cost of a special rebate given by some electricity distribution companies in 2014 and 2015 (in accordance with the government 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.
Total expenditure	£	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).
	% of allowed revenue	How much of its allowed revenues a company used to fund its Totex expenditure, before covering other day-to-day costs.
Dividends paid		Dividends paid in the year.
Gearing		A ratio measuring the extent to which a company is financed through borrowing. Ofgem calculates gearing as the percentage of net debt relative to the Regulatory Asset Value (RAV).
Credit rating		An evaluation of a potential borrower's ability to repay debt. Credit ratings are calculated from financial records including and current assets and liabilities. There are three major credit rating agencies (Standard & Poor's, Fitch and Moody's) who use broadly similar credit rating scales, with D being the lowest rating (highest risk) and AAA being the highest rating (lowest risk). The companies regulated by Ofgem typically have a credit rating of BBB, BBB+, A- or A.
Actual Return On Regulatory Equity – RORE (vs Ofgem assumption of 6%)		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.
OSHA rate		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 www.osha.gov
RIDDOR rate		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 http://www.hse.gov.uk/riddor

Performance snapshot – Northeast[1]

Network

Network	Actual 2019-20
Number of customers	1.6m
Total DNO network length	41,923km

Reliability & Availability

Reliability & Availability		Actual 2019-20	Target 2019-20[2]	Status	Trend[3]
Customer interruptions (CI)[4]	Inc. exceptional events	50.7	–	–	▲
	Exc. exceptional events	45.5	58.0	Achieved	▲
Customer minutes lost (CML)[4]	Inc. exceptional events	42.7	–	–	▲
	Exc. exceptional events	41.2	50.7	Achieved	▲
Incentive performance reward/(penalty) – IIS[5]	£m	£5.8m	–	–	▶◀
	£/customer bill	£1.79	–	–	–

Customer Satisfaction

Customer Satisfaction		Actual 2019-20	Target 2019-20[2]	Status	Trend[3]
Overall Broad Measure of Customer Satisfaction score out of ten (rank out of 14)[6]		9.02 (10th)	8.2	Achieved	▲
Incentive performance reward/(penalty) – BMCS[7]	£m	£2.0m	–	–	▲
	£/customer bill	£0.49	–	–	–

Connections

Connections		Actual 2019-20	Target 2019-20[2]	Status	Trend[3]
Time-to-quote (days)[8]		7.6	4.8	Missed	▼
Time-to-connect (days)[8]		40.5	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

Social Obligations		Actual 2019-20	Target 2019-20[2]	Status	Trend[3]
Individual Stakeholder Engagement and Consumer Vulnerability (SECV) score out of ten (rank out of six)		6.71 (3rd)	–	–	▼
Incentive reward	£m	£0.6m	–	–	▼
	£/customer bill	£0.15	–	–	–

Innovation

In 2019-20 we spent £1.5m on Innovation projects in our Northeast license area, funded by our Network Innovation Allowance. Our diverse innovation portfolio contains 32 projects that span our four innovation priorities for ED1: developing our smart grid, delivering smart meter benefits, developing our digital services and improving affordability.

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 2019-20, measured by the Occupational Safety and Health Administration (OSHA) rate – 0.14 against a target of 0.31 – representing three reportable accidents in a workforce of around 2,600.

We also achieved no Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) incidents in the year.

Environment

We achieved our oil leakage and business carbon footprint targets for 2019-20. We are also ahead of our target in putting overhead lines underground in areas of natural beauty in the ED1 period to date.

Financials

Financials		Northeast
Unrestricted domestic tariff charge		£74.36
Total expenditure	£m	£181.30
	% of cost allowances	110%
	% of cost allowances (ED1 to date)	99%
	% of allowed revenue	70%
Dividends paid[9]		£20.71
Gearing[10]		51.0%
Credit rating[11]		A3/A/A-
RORE[12]		8.0%

Notes:
1 All financial figures in 2012-13 prices and refer to Northern Powergrid overall unless otherwise stated. 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 2018-19.
4 Unplanned & unweighted figures. Indicative figures as at July 2020, 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[1]

Network

Network	Actual 2019-20
Number of customers	2.3m
Total DNO network length	54,891km

Reliability & Availability

Reliability & Availability		Actual 2019-20	Target 2019-20[2]	Status	Trend[3]
Customer interruptions (CI)[4]	Inc. exceptional events	52.3	–	–	▼
	Exc. exceptional events	49.8	62.7	Achieved	▼
Customer minutes lost (CML)[4]	Inc. exceptional events	43.7	–	–	▼
	Exc. exceptional events	40.2	53.0	Achieved	▼
Incentive performance reward/(penalty) – IIS[5]	£m	£11.6m	–	–	▼
	£/customer bill	£1.85	–	–	–

Customer Satisfaction

Customer Satisfaction		Actual 2019-20	Target 2019-20[2]	Status	Trend[3]
Overall Broad Measure of Customer Satisfaction score out of ten (rank out of 14)[6]		8.80 (13th)	8.2	Achieved	▲
Incentive performance reward/(penalty) – BMCS[7]	£m	£2.5m	–	–	▲
	£/customer bill	£0.39	–	–	–

Connections

Connections		Actual 2019-20	Target 2019-20[2]	Status	Trend[3]
Time-to-quote (days)[8]		7.1	4.8	Missed	▼
Time-to-connect (days)[8]		37.8	39.3	Achieved	▲
Incentive performance reward/(penalty) – connections lead time	£m	£0.1m	–	–	▼
	£/customer bill	£0.02	–	–	
Incentive on Connections Engagement penalty – ICE (if applicable)	£m	Nil	–	–	▶◀
	£/customer bill	Nil	–	–	–

Social Obligations

Social Obligations		Actual 2019-20	Target 2019-20[2]	Status	Trend[3]
Individual Stakeholder Engagement and Consumer Vulnerability (SECV) score out of ten (rank out of six)		6.71 (3rd)	–	–	▼
Incentive reward	£m	£0.9m	–	–	▼
	£/customer bill	£0.14	–	–	–

Innovation

In 2019-20 we spent £2.0m on Innovation projects in our Yorkshire license area, funded by our Network Innovation Allowance. Our diverse innovation portfolio contains 32 projects that span our four innovation priorities for ED1: developing our smart grid, delivering smart meter benefits, developing our digital services and improving affordability.

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 2019-20, measured by the Occupational Safety and Health Administration (OSHA) rate – 0.14 against a target of 0.31 – representing three reportable accidents in a workforce of around 2,600.

We also achieved no Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) incidents in the year.

Environment

We achieved our oil leakage and business carbon footprint targets for 2019-20. We are also ahead of our target in putting overhead lines underground in areas of natural beauty in the ED1 period to date.

Financials

Financials		Yorkshire
Unrestricted domestic tariff charge		£62.24
Total expenditure	£m	£226.70
	% of cost allowances	105%
	% of cost allowances (ED1 to date)	94%
	% of allowed revenue	69%
Dividends paid[9]		£27.36
Gearing[10]		£0.47
Credit rating[11]		A3/A/A-
RORE[12]		6.9%

Notes:
1 All financial figures in 2012-13 prices and refer to Northern Powergrid overall unless otherwise stated. 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 2018-19.
4 Unplanned & unweighted figures. Indicative figures as at July 2020, 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.

Safety

Safety is our number one priority. We are on track to deliver our commitments for the ED1 period, including our ambitious target to halve our accident rate by 2023.

Commitment	Status	Forecast completion
1.1 Remain a leading safety performer, meeting all requirements and halving our accident rate by 2023	Ahead	2022-23

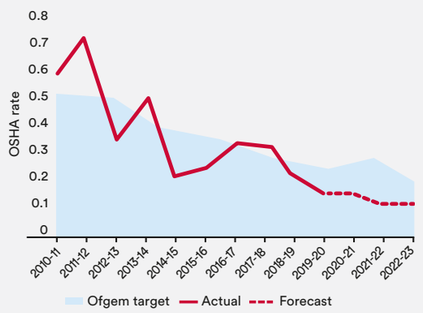
— Our long-term safety performance remains strong, consolidating our place as an industry leader and keeping us on track to achieve our headline commitment to halve our accident rate by 2023.

— Our accident rate in 2019-20 showed a significant improvement over the prior year with an OSHA accident rate of 0.14, which saw us move ahead of our ED1 business plan target. That equated to three accidents in the year and none of those was electrical in nature.

— Our RIDDOR accident rate performance was 0.00 with no reportable incidents in 2019-20. As we write this report we have passed another key milestone, having gone over 500 days within an accident.

— We continue to focus on our safety culture, reinforcing safety standards through leadership engagement and our safety champion's programme.

OSHA accident rate since 2010



— We maintained strong driving performance in 2019-20, incurring only 36 vehicle accidents across a fleet covering ~17.8 million miles, assisted by our investment in fleet vehicle telematics as well as targeted driver training programmes.

— 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.

Stretch target – We are targeting a revised OSHA rate of 0.09 by 2023 (-79% reduction in our accident rate)

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

— Our programme to raise awareness of the dangers of electricity expands every year and in 2019-20 we engaged over 59,000 school-aged children around the risks.

— Our engagement with young people was 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 Drugs awareness teams. Our partnership with the scouts also broadened our reach.

— We operate our Education website that offers an online interactive resource for children to access our safety messages. Over 820 lesson plans were downloaded in 2019-20 with an estimated reach of 24,000 children in the year. We partnered with the scouts between 2015 and 2018 to broaden our awareness of the dangers of electricity issuing 4,174 children with health and safety scout badges.

— A key awareness priority is the risk that overhead power lines pose to farmers, road hauliers and contractors. We engaged with the regional executive of the National Farmers Union (NFU) to plan a combined approach to safety communications for the agricultural community. We've implemented the 'SHOCK' protocol tool which outlines what to do if a vehicle makes contact with our equipment. We have collaborated with the ENA members to produce an educational DVD for the road haulage sector to raise awareness of the dangers of overhead lines.

— We exhibited at the major agricultural shows in the region, attended by over 260,500 visitors, and we 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.

— Our programme to raise awareness of the dangers of electricity with school children has been affected by the COVID-19 pandemic in 2020-21 with schools closures. As schools are re-opening we are working with them to understand how we can re-engage and adapt the programme to adhere to social distancing.

Stretch target – Engage with an additional 10,000 (50,000 total) school age children each year on the dangers of electricity

Commitment	Status	Forecast completion
1.3 Keep safety as a central driver of investment decisions and appraisals	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.

— We have continued to comply with all legal, regulatory and environmental requirements without compromising the safety of our employees, customers or the public. In 2019-20, we replaced over 32,779 service cut-outs, removing 1,621 units that did not comply with Electrical Safety, Quality and Continuity Regulation (ESQCR) safety standards.

Commitment	Status	Forecast completion
1.4 Promptly resolve any network safety issues arising from the smart meter roll-out	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 on behalf of energy suppliers to install smart meters on our network if they have gone through a training and competency assessment.

— Since 2016 we have required that any meter operator staff who are or will be installing smart meters on our network attend our training programme. Over 600 installers have completed the course to date. We believe that establishing and maintaining these high-standards will reduce the number of safety issues associated with the smart meter rollout.

— 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. Our service level agreement (SLA) performance for defect resolution is 83% for Category A and 91% for Category B (both against targets of 90%), having resolved almost twice as many defects than forecast. Our industry-leading web-based appointments system, launched in 2017, continues to receive positive feedback, avoiding repeat visits for customers by coordinating work between meter operator and our service providers. We continue to participate in industry working groups to ensure that our programme benefits from best practices as smart meter roll out volumes increase.

— In 2013, the HSE brought in a requirement for DNO's 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. Using this data we have identified areas for proactive intervention and will be setting up a programme to undertake this work.

— 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.

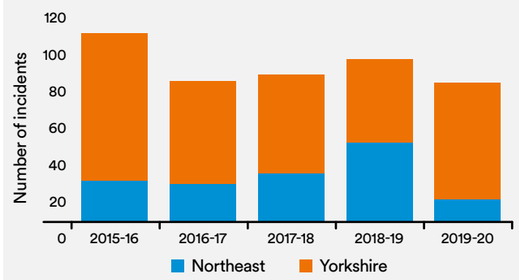
Commitment	Status	Forecast completion
1.5 Reduce the impact of metal theft, including improving substation security	On track	2022-23

— The level of metal theft from our network continues to be low although we have experienced 'hot spots' during 2019-20. In these areas we have engaged with the local police to respond to these incidents. We continue to engage with police at both regional and national level to deliver national programmes to mitigating metal theft which continue to be effective.

— 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 £1.5m upgrading Critical National Infrastructure (CNI) sites resulting in a 50% reduction in the number of vulnerable sites on our network. As part of our investment in this area, we've developed an Alarm Receiving Centre which we expect will be commissioned in late 2020.

Metal theft incidents – ED1 to date



— Looking ahead, we'll continue to install deterrents such as electric fences at potentially vulnerable sites. We are also implementing intruder detection technology that will link to our Alarm Receiving Centre. Our programme to replace substation security locks got underway in 2019-20 aimed at reinforcing physical security at all of our substations. The project to replace all substation security locks got underway in 2019-20 with the completion of a trial of a potential solution.

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.

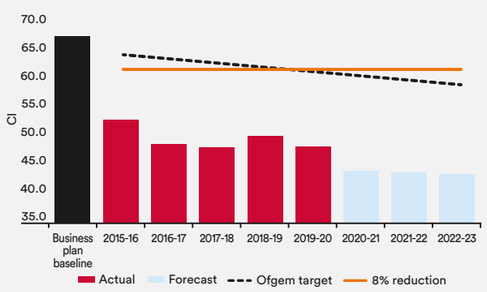
Commitment	Status	Forecast completion
2.1 Achieve 8% fewer unplanned power cuts by 2023	Ahead	2022-23

— We are outperforming the targets we set in our ED1 business plan on unplanned customer interruptions (CI) having achieved a 28.0% reduction relative to our business plan baseline in the period so far.

— In 2019-20, we continued our investment in high voltage automatic fault restoration technology that automatically reconfigures the network in response to faults. We upgraded 62 additional primary substations in the year, taking the total number enabled with the technology to 252 in ED1 to date, covering 32% of substations on our network.

— We expect fault prediction technology to play an increasingly important role in our plans as we move towards the next price control period, ED2. This innovative new technology has passed tests in a live environment, and we have now moved to the next phase of roll out with the installation of 50 portable units. These units are assessing our network in real time identifying signs of faults before they develop. We have also installed a further 8 units in blocks of flats to help reduce the risks from electrical supply equipment.

Customer interruptions – unplanned



Stretch target – We are forecasting to reduce the number of unplanned power cuts by 30%

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

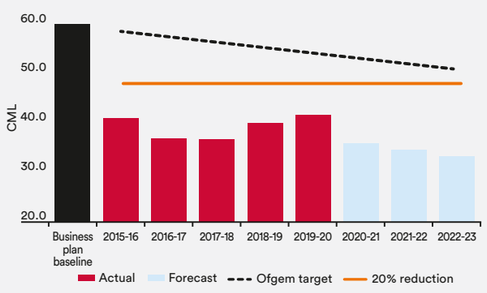
— We are outperforming the targets we set in our ED1 business plan having achieved a 30.7% reduction so far in unplanned customer minutes lost (CML) relative to our business plan baseline.

— 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.

— 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.

Customer minutes lost – unplanned



Stretch target – We are forecasting to reduce the average length of an unplanned power cut by 40%

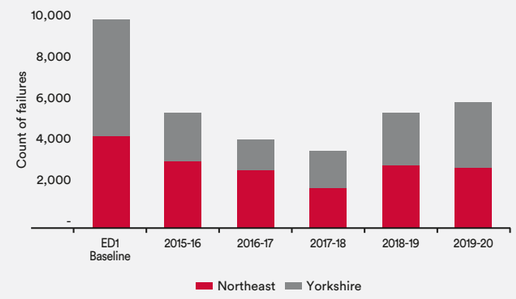
Commitment	Status	Forecast completion
2.3 Restore electricity within 12 hours - and if we don't, make enhanced and automatic payments to all customers (with extra for our vulnerable customers)	Delivered	2015-16

— 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.

— Since the start of the period, we have reduced the number of power cuts lasting more than 12 hours by 38% in line with Ofgem's measure*.

— In 2019-20, our performance took a step back compared to prior year, an increase of 12%, as a result of an increased volume of faults occurring, particularly during the winter months in our Yorkshire license, but not to the level where they would be classed as a severe weather events by Ofgem.

12 hour failures – customers



— To provide a view of underlying performance improvement, we also look at 12-hour restoration excluding periods where we have been in standby major incident mode due to weather conditions. On that measure, we have improved underlying performance in the ED1 period by 55% so far.

— Our performance improvement has been driven in part by our new generator contract that enables us to deploy mobile generation to temporarily restore power alongside a new first response approach and advisory matrix used by our colleagues to make key decisions during the restoration of supplies.

— We will continue to work on network improvement and operational response 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.

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

— At the start of 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 2019-20, 98.1% of planned power cuts lasted no longer than eight hours, an improvement of 0.6 percentage points from the previous year 2018-19. In the winter months we achieved our 4.5 hour target 86% of the time, an improvement on our 2018-19 performance by 3 percentage points.

— We have also reduced the length of planned power cuts and in 2019-20, the average length was 195 minutes, an improvement of six minutes from the previous year 2018-19.

— Customer satisfaction for our planned power cut service is high with our customers scoring us at 90.3% in 2019-20 (ranking 4th in the industry), an improvement of 0.1 percentage points from 2018-19; and an increase of 4.7 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 service to our customers. Following the success of our Silent power innovation project [see page xx, innovation], we will be exploring how this green alternative to a mobile generator can be utilised across our region to support customers during planned power cuts.

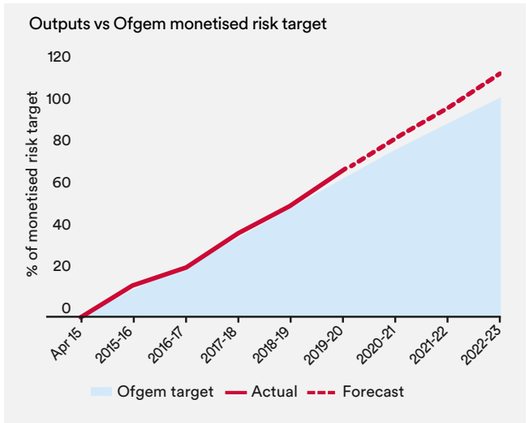
*12 hour failures. Excluding exceptional events and after clock stops have been applied.
**In line with the Ofgem measure but excluding customers who are subject to performance levels that are above BAU operations and trigger our major incident processes.

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

— Our investment plans target 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 through our annual preparation for the submission to our regulator. 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 (4.3 percentage points) of a straight line profile of Ofgem's asset health and criticality index measure for the period to date at an overall group level. We are 12.5% ahead of our target in the Northeast, and 5% behind in Yorkshire. We have plans to upgrade the network in Yorkshire which will see us deliver our targets, including completion of significant EHV plant and cable schemes in the final years of the ED1 period.

— Our ED1 forecast is currently set to exceed our asset health and criticality target by up to 10% by the end of the period whilst spending in line with Ofgem allowances.



Stretch target – Deliver up to 10% more outputs than our ED1 target whilst spending in line with cost allowances

Commitment	Status	Forecast completion
2.6 Target network improvements for our worst-served customers	On Track	2022-23

— 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.

— Whilst we measure our performance against this regulatory definition and currently have no customers that fall under the definition, we continue to focus our improvement plans on those customers who experience lower levels of service than others.

— In 2019-20 we initiated an improvement programme to reduce the impact of multiple interruptions for our customers.

— Technology is a key tool that we can use to address these 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 are focusing our network automation programme on some of the worst performing circuits on our network, and in 2019-20, we have addressed 54 of our high voltage circuits in the Northeast and 117 in Yorkshire (an investment of £3.2m) covering over 235,000 customers.

— Looking ahead, using new technology we are developing the capability to continuously monitor low voltage circuits and predict future faults together with their locations, so we can move from a reactive to a proactive in our approach to fault management.

Commitment	Status	Forecast completion
2.7 Ensure adequate network capacity for customers wanting to connect	On Track	2022-23

— 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 signposting 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 607 sites. The overall firm capacity availability = on our network is good:

			Licence	
			Northeast	**Yorkshire**
Number of sites			196 (196)	409 (409)
Average LI maximum demand as a % of firm capacity			56.6% (57.4%)	55.0% (55.7%)
Loading				
Ranking	Lower bound	Upper Bound		
LI1	0%	<80%	182 (180)	378 (374)
LI2	80%	<95%	13 (16)	29 (31)
LI3	95%	<99%	0 (0)	0 (0)
LI4	99% (<9 hours)	n/a	1 (0)	1 (3)
LI5	99% (>9 hours)	n/a	0 (0)	0 (1)

* (Values for 2018-2019 in brackets)

Active Network Management (ANM)

— Our first replicable ANM scheme went live at Driffield in March 2019. Our scheme is an economical way of gaining access to headroom on the network and deferring the need for traditional reinforcement.

— In 2018-19 we identified four additional areas on our network that are suitable for ANM – Keadby, Grimsby West, Creyke Beck and Saltend Grid Supply Points. For the Keadby and Grimsby West sites we are going through the Modification Application process with NGET following customers accepting offers, with the other sites yet to have accepted offers.

— In November 2019 we selected two more areas for ANM roll out, Camblesford and Saltholme. Additionally, we have approved ANM for general deployment to manage reverse power flow constraints at grid supply points for any EHV/132kV connection – this has resulted in a significant increase in ANM activity in 2020.

— We have restructured part of our charging mechanism for ANM to recognise the benefit additional DG connections make to society's overall contribution to net zero. Northern Powergrid will socialise the cost of the communications infrastructure, and the customer will pick up the cost of the final mile connection from the local supply point through to their site.

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.

— In 2019-20, voltage reduction took place at 128 sites taking our total to 470 sites in ED1 to date. 1.2GW of additional capacity was released in the year which takes us up to 3.2GW released in the period so far.

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. In the first four years of ED1, this released 29MVA of demand and 21MVA of generation capacity.

— In 2019-20, we targeted a further 35 sites where customers were not using at least 75% of their demand or generation capacity. One demand customer reduced their capacity releasing a further 3MW.

— 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. Further enhancements are explored 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
2.8 Increase the resilience of the network to flooding	Delivered	2019-20

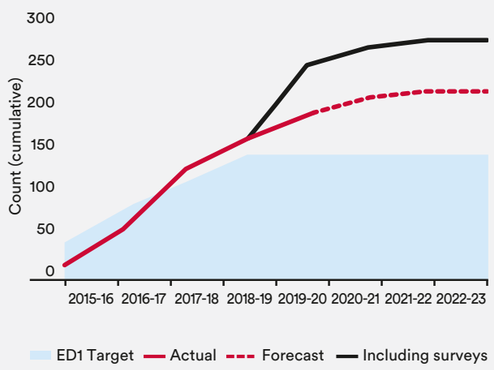
— Our flood defence programme continues to be an area of high priority for our stakeholders. Our original ED1 target was to upgrade defences at 141 sites in the period, including 15 from the previous period (DPCR5).

— 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, we expect 214 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 expanded programme is being delivered within our original cost al lowances as a result of contract efficiencies realised and efficient design specifications.

— In 2019-20 we upgraded defences at a further 24 sites, taking our total flood defence upgrades to 186 sites in ED1 to-date at a cost £31.3m.

Flood defences installed ED1 to date



Stretch target – Additional 118 sites added to our ED1 programme

Commitment	Status	Forecast completion
2.9 Use smart meter alarm information to improve network performance and the information we provide to customers	Behind (Due to 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 roll-out programme with volumes of installations significantly down in 2020 to-date.

— Despite those delays, our systems have been ready on time and to plan. We have connected to the national data communications company (DCC) and that connection is now functioning well. 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.

— Approximately 2.0 million smart meters have been installed for customers in our region which is just over 50% of our customer base of 3.9m. Of these, 190,000 are second generation meters (5% 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 will provide us with additional, but limited, data from those meters.

— In 2019-20 Our Boston Spa Energy Efficiency Trial (BEET) was mobilised to use 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 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

Our aim is to be the best at serving our customers and we've made significant progress in ED1 to date by way of progressing our business plan commitments.

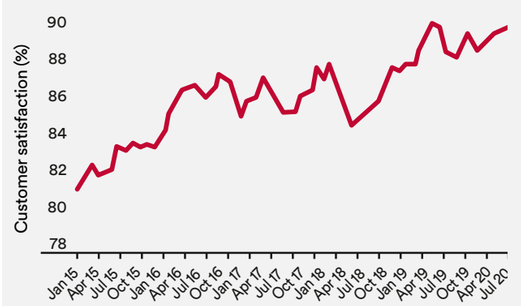
Commitment	Status	Forecast completion
3.1 Make customer service more reliable, better communicated and backed by slicker processes. Be faster, at no extra cost	Delivered	2019-20

— Since the start of the ED1 period, we have achieved a 6.7 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 delivers high-quality customer conversations, evidenced by our success in the country's largest mystery shopping benchmarking program.

— During 2019-20, we launched our 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 and put things right.

BMCS performance



— Other key improvements implemented in the period so far include:
- Continued expansion of our live web chat services for our customers.
- Continued development 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 customers' contact details.

— 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 are in the process of procuring 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 even faster with the information they need.

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

— Web-based technology has made it simpler and quicker for our customers to access our 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.

— We have continued to develop and expand the range of services we offer including the launch of a new online service for disconnections quotations in June 2018, allowing customers to apply for a disconnection quotation online and further development of our existing services to provide a more streamlined customer experience, on the back of customer feedback.

— In 2020-21 we will be extending the reach of our CRM system to provide dynamic, on the day updates for customers who have requested a general enquiry service or reported a problem with one of our assets.

Commitment	Status	Forecast completion
3.3 Continue to improve the quality and speed of our complaint resolution	Ahead	2022-23

— The speed that we deal with customer complaints continues to improve year-on-year since the start of the period. We measure our performance against Day+1 and Day+31 complaint resolution targets and are achieving our ED1 business plan targets on both measures.

— In 2019-20 we resolved 84.7% of complaints in Day+1; an improvement of 4.6 percentage points compared to prior year (30.9 percentage points since the start of the ED1 period). We expect to continue our improvement and consistently achieve our ED1 business plan targets on this measure.

— Our performance improvements in complaint resolution continue to be driven by investment in our people, processes and supporting systems.

— In 2019 a full review of all customer complaints in our system was undertaken. This allows us to see with greater ease the challenges our customer's experience and enables targeted feedback to be shared with teams in our business with the aim of avoiding future complaints.

— We resolved 97.2% of complaints in Day+31 in 2019-20 which continued our improving trend on this measure.

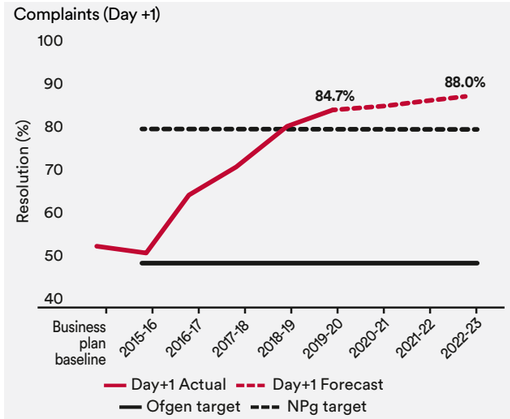
— Our front line colleagues are empowered to put things right for our customers and are actively encouraged to work with our operational teams to resolve customer complaints quickly. The team benefit from regular dialogue with our new Regional Customer Service Managers.

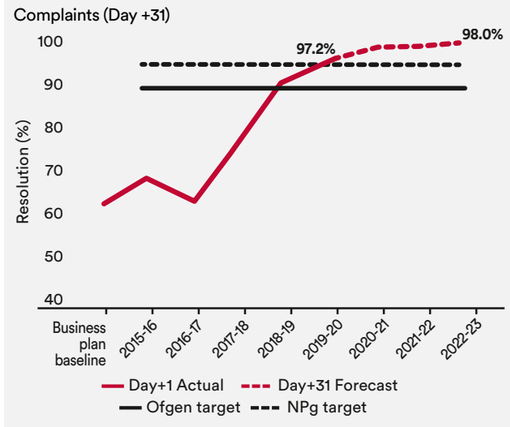
— As a result of our on-going activity to improve our overall customer experience we have seen a 43.7% reduction in the volume of complaints since the beginning of RIIO-ED1.

— We have had no repeat complaints or adverse ombudsman decisions during this price control period to date.

Stretch target: 88% of complaints to be resolved within the first day (Day+1) of being received

Stretch target: 98% of complaints to be resolved within the first month (Day+31) of being received





Commitment	Status	Forecast completion
3.4 Provide better information to customers experiencing power cuts through voice or digital communication channels	On Track	2020-21

— 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).

— Improvements have been made to our automated telephony platform (Interactive Voice Response, IVR), to ensure 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.

— February 2020 saw us implement 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 version of the system to provide real time updates throughout.

— In 2020-21 we will be extending this service to unplanned power cuts using on-site information provided by our field teams to provide customers with real time updates.

— Looking ahead, we are working on an innovative machine learning solution for improving our initial estimated restoration times which we expect to launch in 2021.

Commitment	Status	Forecast completion
3.5 Use technology to enable our contact centre to move from being largely reactive to mostly proactive	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, we have seen an increase in the amount of inbound customer calls received into our Contact Centre following the launch of the '105' single emergency number in September 2016. In 2019-20, 69.6% of inbound calls were routed from the 105 number.

— 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 2019-20, 79.6% of our communications were outbound, with over 2 million outbound contacts coming from our contact centre.

— We now hold mobile numbers for 57% of our customers and email addresses for 65% enabling us to proactively contact customers (where appropriate).

— In 2018-19, 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).

— In Q3 2019 we launched a multi-channel approach to pro-actively contact any Priority Services Register (PSR) customers who had not had any communication with us for a 2 year period to ask if they wished to remain on our PSR. This has been combined with an automatic review if a customer contacts us direct. The process has ensured that we reach a wider audience as part of our on-going data cleanse and that our PSR contains only those customers who continue to require the extra support that we can offer them.

— Our launch of on-the-day updates for our planned power cut customers in February 2020 continued our roll-out of proactive communications which will progress onto unplanned power cuts in 2020-21.

Commitment	Status	Forecast completion
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

— 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 has made it even easier and quicker to get in touch with us – 70% of inbound calls now come via that route.

— We also 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, on-line power cut logger, knowledgebase articles and dynamic FAQs on our website.

— We are currently in the process of procuring 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 even faster with the information they need.

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
5.1 Route calls from Priority Service Customers directly to contact centre advisors, bypassing automated messaging	Delivered	2015-16

— All of the calls we receive from customers on our Priority Services Register (PSR) 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. In 2019-20, 93.4% of calls received from PSR customers were answered by an advisor.

— 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.

— Our vulnerable customers tell us that one of the most important things we can do during a power cut is to keep them proactively informed and they also tell us that their needs change throughout the duration of a power cut.

Commitment	Status	Forecast completion
5.2 Build partnerships with organisations to help us deliver our social programme	On Track	2022-23

— We have continued to expand our partnerships with charities, community groups and other third party organisations to deliver more support for our vulnerable customers.

— In 2017-18 we launched our Partnering Communities Fund. 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 Register (PSR).

— In 2018-19, we merged our Partnering Communities Fund with Northern Gas Networks' Community Promises Fund to create the Community Partnering Fund which now offers £100,000 to community groups over a 12 month period with 2 rounds of applications per year. The first two rounds have seen 14 community groups across the region funded to deliver programmes in Energy Efficiency, STEM, Fuel Poverty, PSR and gas/electricity safety.

— We have a strong and effective relationship with the Citizens Advice Bureau (CAB). In 2018-19, we expanded two of our key schemes within Leeds and Newcastle to reach a wider audience. One of the two schemes, the Newcastle CAB, has a partnership with the Royal Victoria Infirmary (RVI) hospital Chest Clinic to directly support those in hospital who may be experiencing fuel poverty and related medical issues

— We are addressing inequality and providing targeted local support to those in need through our investment projects. We have extended fuel poverty services by partnering with key agencies (NHS trust and organisations such as West Yorkshire Fire service, Affordable Warmth Hull) and we have mapped our partners across the regions, aligning them with vulnerability profiles from Experian data.

— Our partnership with Green Doctor has extended to cover Teesside and Hull and is now offering accredited training to local organisations, creating a network of energy efficiency advisors to support local communities and those most in need.

Commitment	Status	Forecast completion
5.3 Promote and raise awareness of our Priority Services Register to and with other partner organisations	On Track	2022-23

— The partnerships we have established and grown have helped us to identify the most vulnerable communities in our region and tailor our PSR campaigns accordingly.

— In 2019-20, we saw a further 160,000 PSR registrations, and following our annual data cleanse, we now have 936,000 customers on our PSR register (+4% in the year).

— Using data analytics, we developed a strategic PSR recruitment campaign for Health and Mental Health, targeting the most at risk communities within our licence areas of West Yorkshire, South Yorkshire and Tyne & Wear. We targeted a total of 220 community partners in these areas and established relationships with 70 new community partners leading to a significant increase in PSR registrations in those areas.

— Following research into barriers and challenges of engaging with the PSR we are launching our Priority Services register as a membership club. From the engagement we have carried out stakeholders, some customers did not want to be added to the register as it has negative associations. Repositioning our PSR as a membership club means it as one less thing for someone who is vulnerable to worry about as they do not need to identify as vulnerable to engage. We will be launching with a communication campaign targeting customers and partners in Q4 2020.

— We held our Consumer Vulnerability conference in March 2020 with over 70 attendees from various organisations including Citizens Advice, local authorities, third sector, public and private sector organisations. An outcome of this is that all attendees are now promoting the PSR via their engagement with customers.

— We have invested in data on the number of people in our region experiencing the impacts of fuel poverty. We also know that fuel poverty is impacted by multiple vulnerabilities. We launched a targeted campaign promoting PSR and energy saving measures across the Hull and Newcastle areas to alleviate these pressures. The campaign generated over 3 million impressions and the video that accompanied the campaign received over 30,000 views on social media. This initial campaign saved in the region of £281,000 per annum for the 250,000 households in fuel poverty in the targeted areas. The campaign has now been extended to cover the rest of our operating region with potential savings of £1.7m.

Commitment	Status	Forecast completion
5.4 Enhance our training for front-line staff providing additional support for Priority Service Customers	Delivered	2018-19

— 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 front line 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.

— As well as training our employees to deliver high-quality services for our vulnerable customers, we have issued over 1,000 PSR 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.

Commitment	Status	Forecast completion
5.5 In conjunction with local authorities, identify socially-deprived areas and prioritise our support towards them during a power cut	On Track	2020-21

— 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.

— In 2017-18 we expanded our stakeholder mapping to include over 120 users, including Local Authorities, the NHS, Citizens Advice and local housing authorities. These maps allow us to better coordinate incident response, giving our partners access to the information needed to support local communities.

— In 2018-19, we enhanced our maps with a new PSR layer that highlights PSR customers affected by live planned and unplanned power cuts.

— Our partnership with Gateshead Council delivered successful results during a period of extreme weather in March-April 2018 (the Beast from the East). 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.

— In 2019-20, 85 of our colleagues were redeployed to provide volunteering support to local charities delivering meals, prescriptions and supporting those at risk of loneliness. Over 1,199 hours of volunteering was logged during the period.

— We also developed data sharing agreements with all Local Authorities in the year, which supported local response to the impact of COVID-19 by enabling data sharing of our PSR information through Resilience Direct.

— Looking ahead, 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.

Commitment	Status	Forecast completion
5.6 With others, explore the feasibility of community-level aggregated-demand response in return for a community rebate	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 has now been 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 Emerging Thinking on the ED2 planning period, published in September 2020.

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

— Our Priority Services Register (PSR) 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 PSR through targeted campaigns using multiple channels, community partners, friends, family and carers, allowing them to register vulnerable households.

— We consider this approach to have delivered the outcome of this commitment without the need for a separate scheme, keeping our PSR service simple and easy to navigate.

— In 2016-17, we improved our online and paper-based PSR application processes so that people who need to add a friend or relative can do so more easily. Our PSR 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 PSR but awaiting contact with the customer before signing-off consent to share their data with partners.

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

— Following the inspection of 440 high rise installations, our programme for ED1 includes 104 properties that will be refurbished with a forecast expenditure of £7.2m for the ED1 period.

— We also expect to complete upgrades at 300 low-rise buildings and 132 network assets, including substations, transformers and switchgear.

— We have identified the use of low voltage technology on high priority buildings to monitor pre-fault activity and drive early intervention work.

— As part of the initial phase of works, we awarded and released the first tranche of work to refurbish 33 high rise blocks in Leeds; however, programme delivery work is currently on hold due to the COVID-19 pandemic and local authority restrictions in place.

— Our initial phase of work – Leeds high-rise project, and low-rise survey/intervention work in the North East – has been on hold for a number of months. Discussions are currently underway with local authorities and housing associations to agree an appropriate way forward.

Commitment	Status	Forecast completion
5.9 Explore solutions to connect rural communities to the network	On Track	2022-23

— In 2018-19, we launched our £2.7m Network Innovation Allowance funded 'Microresilience' project. The project will assess the technical viability and comparative economics (including non-financial benefits) of resilience solutions enabled by smart technologies under the following circumstances:
– 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. The technical challenges are now addressed; however the site works for installation are now forecast for completion by Summer 2021, (delayed from Summer 2020).

— 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
5.10 Provide more customer support vehicles along with more services in them	Delivered	2018-19

— Since we wrote our ED1 business plan, we have added three customer support vehicles (CSVs) to our fleet, taking our total to five.

— 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.

— In 2018-19, we 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 2019-20 we began the recruitment of Customer Service Managers who will assume responsibility for the deployment of CSVs in their regions, leveraging the data we hold on social deprivation to best utilise these in power cut situations.

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 are on track to meet our headline commitment to reduce small works end-to-end lead times by 30%.

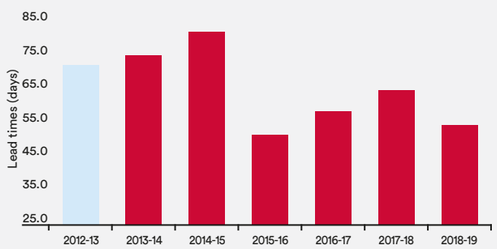
Commitment	Status	Forecast completion
6.1 Reduce end-to-end connection timescales for small works by more than 30%	On Track	2022-23

— In ED1 to date we have reduced connections end-to-end lead times for small works by 27% relative to our ED1 business plan baseline.

— Improving customer satisfaction continues to be our primary objective with our single point of contact model driving a customer satisfaction uplift of 9.7 percentage points since the start of ED1.

— Our delivery model is focused on doing the right thing for our customers, meeting their expectations in the service we provide. 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 the quotation should they wish to go ahead with the delivery of the connection. Sometimes site visits and later delivery dates at the request of customers result in slightly longer lead times but often drive increased levels of satisfaction.

Small works connections – lead times



— In August 2019 we implemented the next phase of improvement in the end to end delivery of connections for small works with the launch of our quote-on-site service enabled by hand-held technology resulting in a 3.5 percentage point increase in customer satisfaction

— Looking ahead, we are focusing 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 with the aim to save time and cost for customers whilst increasing the quality of our services. solution.

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

— In 2015-16, in response to customer feedback, we implemented a payment process 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.

Commitment	Status	Forecast completion
6.3 Provide more flexible quotations, including online self-service and faster quotes.	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.

— 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. Since its launch we have registered 1,276 completed enquiries in which our stakeholders have obtained their own budget estimate.

— 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.

— In parallel, we have 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 Driffield, East Yorkshire.

— In February 2019 we held an ANM webinar with a live Q&A session where we shared the areas of our network that have been selected for future ANM rollout. This included four areas that are approaching their export capability limits – Keadby, Grimsby West, Creyke Beck and Saltend Grid Supply Points.

— In November 2019 we selected two more areas for ANM roll out, Camblesford and Saltholme. Additionally, we have approved ANM for general deployment to manage reverse power flow constraints at grid supply points for any EHV/132kV connection, this has resulted in a significant increase in ANM activity in 2020.

Commitment	Status	Forecast completion
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

— 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.

— In 2019-20, we continued our routine refresh of our heat maps and contracted capacity register as part of the monthly process.

— We continue to support customers in using these tools. As well as providing on-going 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.

— Looking ahead, we're further enhancing the information that we include in our heat maps by publishing data on the known transmission system constraints, better informing stakeholders through access to more timely and accurate data in relation to the transmission system.

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

— We rolled out a single point of contact model to our connections customers, to guide them through the application and delivery process and allow customers to liaise with a named member of our team through the lifetime of the project. This provides our customers with a single point of contact who is accountable for the delivery of all aspects of the works and is able to resolve issues and communicate progress effectively. In parallel we have also introduced measurable engagement milestones to ensure that our customers receive proactive updates from the single point of contact throughout the quotation process.

— Whilst the introduction of the single point of contact model has significantly enhanced our customer relationship offering we have also improved our Connections Surgery experience to provide provides all customers with the opportunity to communicate with NPg in respect to business planning and project development outside of the formal application process.

Commitment	Status	Forecast completion
6.6 Provide a better service for non-contestable elements of work – regularly publishing key indicators.	**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	%	
NPg	**1,156**	**99.85%**	**1**	**0.15%**	**1,156**
Northeast	**471**	**100%**	**0**	**0%**	**471**
Yorkshire	**685**	**99.85%**	**1**	**0.15%**	**686**

— In 2019-20, 0.15% of our quotations in the year were issued outside of the guaranteed standard timescale – that's only one of the 1156 issued.

— In April 2019, we amended our Code of Practice for Work on Street Lighting and Street Furniture including Installation, Repairs and Maintenance as a result of stakeholder engagement with the Highways Engineers Association. This modification now permits Local Authorities who use nationally accredited training and competency schemes to enter into an agreement with Northern Powergrid to authorise their own competent persons to carry out work which requires operation of Northern Powergrid's unmetered service cut- out fuse.

— In July 2019 we concluded our unmetered overhead street lighting trial and subsequently further extended the scope of contestable works to allow suitably accredited ICPs to undertake transfers of existing overhead bracket-mounted street lighting columns which where historically classified as non-contestable works, therefore opening up a further work stream for Independent Connection Providers.

— In November 2019, following direct stakeholder input at our ICP seminar, we agreed to review our position on Link Boxes for small works IDNO connections. Due to the continued expanse of competition, we are now seeing IDNOs adopting 1 phase and 3 phase small works connections to Electric Vehicles charging points which have introduced unforeseen issues for these types of connections. Our review is underway and we have made the commitment within our 2019-20 Incentive on Connections Engagement plan to complete this by the end of December 2020.

— We continue to review and improve our non-contestable input services that help to ensure that ICPs and IDNOs are able to compete freely and fairly for work across all voltages within our distribution service areas. Following direct stakeholder feedback we have 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 Connect. This provides customers with further information to support their choice of connections provider and also reassures local authorities and other similar organisations of an ICPs authorisations in these areas.

— We also continued 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.

Smart energy

Despite lower than expected uptake in low carbon technologies and the delay to the national smart meter roll-out programme, we're continuing our smart grid enabling investment programme, laying the foundation for a more flexible, active and customer-led network.

Commitment	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**	**2022-23**

— 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 the role of Distribution System Operator (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.

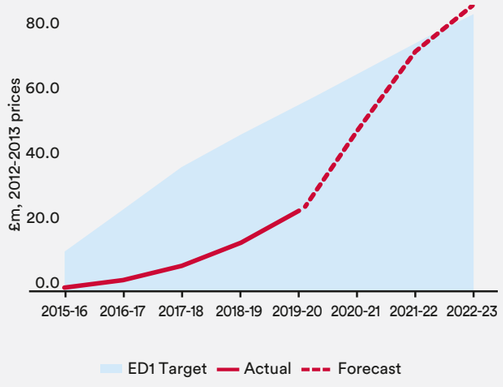
— This investment is giving us greater ability to control and analyse how our network is operating in real-time, enabling us to respond to the uptake in low carbon technologies.

— Whilst our expenditure in the early years of ED1 was below plan, we have had to overcome more technical challenges than originally anticipated, including substantial recruitment and retraining of engineering staff to deliver the programme. More recently we have encountered technical performance challenges with our primary and secondary SCADA replacement projects.

— In 2019-20 the programme continued to accelerate, installing 2,276 units on the network, investing £10.7m. This took our total expenditure in ED1 to date to £24.3m on smart grid enablement.

— The programme has also unfortunately been impacted by COVID-19 towards the end of the regulatory year. In quarter 2, 2020 the programme had to be paused because it was one of the few that required people to work closely together in relatively confined spaces – so the COVID-19 working restrictions meant we had to develop a new set of working methods for those tasks. Work is back underway but at slower run-rates than originally planned due to working restrictions.

Cumulative Smart grid expenditure



Progress on the programme to-date includes:

— Delivering the replacement of transformer control relays and substation remote terminal units whilst installing LV monitoring units across the network.

— Commencing the upgrade of our serial low bandwidth primary communications network with a secure and resilient IP based system. We have started to upgrade and replace the backhaul communication links, while our proof of concept for the overall IP network has been delayed by a year due to a series of technical performance challenges.

— We have completed the procurement process for replacing our secondary communications network with an IP based one and placed a contract for the proof of concept and follow-on rollout.

— Our first replicable Active Network Management (ANM) system for customers in Driffield is in place and we have accepted customer connections for a four further areas on our network that we are progressing through the engineering phase. This will enable us to continue to connect Distributed Generation in these areas without triggering significant connection reinforcement costs.

— We started 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.

Commitment	Status	Forecast completion
7.2 Invest £52m in smartgrid network reinforcement that pays back by 2023 through avoiding £86m of traditional reinforcement – a net saving of £34m compared with traditional reinforcement methods	**Behind** (Due to external factors)	2022-23

— 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 in excess of 13,000 looped services at a cost of £12m.

— 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. We've completed 85% of our primary substation voltage reduction programme in ED1 so far, releasing 4.2GW of capacity on local networks and we remain on track to complete the programme by the end of ED1.
- 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.

— 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 2019-20, we began discussions with Ofgem and the Energy Networks Association as part of a Green Investment Taskforce. This initiative aims to leverage the capabilities of networks to assist in stimulating a green recovery of the economy by accelerating vital investment in infrastructure. The first phase of this programme includes initiatives that support the wider economic recovery that we can get on with now. As such, we have agreed to £30m of low voltage network reinforcement as part of this ED1 business plan commitment that will enable around 20,000 customers across our North East and Yorkshire regions to adopt low carbon technologies, unlock the potential for participation in flexibility markets; and significantly reduce electrical losses on the parts of the low voltage network.

Commitment	Status	Forecast completion
7.3 Provide opportunities for customers to participate in demand-side response to reduce the cost of running the network	**On Track**	2022-23

— We updated our stakeholders on our approach to deploying customer flexibility when we published DSO v1.1 in October 2020. This set out what we were doing to roll-out flexibility in the near- and medium-term. Our approach, in close collaboration with the Energy Networks Association Open Networks project and flexibility providers, is to seek opportunities to deploy customer flexibility to maximise efficient use of the network for three key use cases: deferral of traditional reinforcement, planned maintenance and emergency support.

— During 2019-20, we ran our first e-auction for emergency support customer flexibility. This resulted in no services being procured. The market feedback was that there was insufficient value in this product where the use is uncertain. Instead, it is being viewed by flexibility providers as an additional product that could be provided alongside the reinforcement deferral product that would provide a more certain revenue stream.

— Through the year, we have remained alert to the opportunities for other use cases and flexibility needs. The absence of any new major reinforcement schemes has meant that there have been no procurement exercises for reinforcement deferral. Similarly, there have been no needs identified for planned maintenance where additional customer flexibility back up was required as a contingency to support construction works.

— We are continuing to standardise industry processes that enable common flexibility provider and distribution network operator interfaces to support the national uptake in customer flexibility. Specifically, through the Open Networks project, we have been developing standard contract terms and product specifications. The e-auction for emergency support utilised these GB standard product specifications for the first time. Internally, we are developing our processes and systems to enable use of customer flexibility when the need arises. We are also one of four DNOs involved in Flexible Power, a new initiative to provide flexibility providers with a direct path to participate in flexibility on multiple networks launched in autumn 2020.

Commitment	Status	Forecast completion
7.4 Modify our trading and customer service systems to realise benefits from the new smart meter data	**On Track**	2021-22

— The national smart meter roll-out programme continues to experience delays. In 2019-20, we have also experienced delays to accessing smart meter data as a result of our Data Privacy Plan being rejected by Ofgem (see commitment 7.5).

— Despite the ongoing delays, we have taken a number of positive steps internally to prepare to realise benefits for customers.

— The central national IT infrastructure for smart meters went live in 2017 and we achieved connection to the system in November 2017, two months ahead of the mandated deadline.

— We have continued to make progress on system integration projects and establishing secure network communications with our smart metering system. We have a number of in-flight projects to make use of smart meter data in our trading and Customer Services systems including;

- **Smart Telephony:** Integrating smart meter data with our telephony platform to route power outage voice traffic dependent on smart meter status
- **Smart Power Cut Maps:** Updating our website's online power cut map with power cut information from smart meters
- **Smart Asset Models:** Providing visibility of smart meter and status on a layer on our asset model map to assist fault location investigations and restoration confirmations
- **Smart Customer Info:** Notifying contact centre staff to update outbound recorded messages on the status of a power cut and to trigger outbound updates about outage and restore activities to customers

— We continue to keep under review the most efficient delivery approach for our projects dependent on our access to smart metering data, which remains limited due to the national system issues.

— We are experiencing the same challenges as the other DNOs with regards to the inconsistency of Power Outage and Power Restoration alerts and the inconsistent behaviours experienced from different meter and firmware combinations for voltage data and time periods. We are continuing to collaborate via various forums with the DCC, suppliers and DNOs to resolve these issues. We are also putting significant effort into analysing smart meter data and trying to reconcile smart metering alerts to 'on the ground' activities.

— Looking ahead, we will continue to progress our projects (where efficient) so we are ready to make use of smart meter data as it becomes available.

Commitment	Status	Forecast completion
7.5 Use smart meter data to optimise network investment and reduce losses	**Behind** (Due to external factors)	2022-23

— The national smart meter roll-out programme continues to experience delays, most latterly due to COVID-19.

— We achieved connection to the national smart meter system in November 2017 however we have received limited smart meter data to date due to the low volumes of second generation (SMETS 2) meters (190,000 in our region) and technical issues with the national roll-out.

— In 2019-20, we continued to work with Ofgem to develop our Data Privacy Plan, which outlined our proposals and controls for accessing, aggregating and utilising half hourly electricity consumption data. Our aim has been to ensure our plan meets the requirements that will provide the optimum benefits as shaped by our engagement with stakeholders. Ofgem rejected our initial proposal in February 2020, which has caused delays to us being able to access the smart metering data. We re-submitted our plan to Ofgem in October 2020, reducing the scope of data access, and we are continuing discussions to agree on a plan that will allow us to deliver benefits to our customers.

— Looking ahead, it is not clear yet the full impact that COVID-19 will have on the national smart meter programme. For example, for the period April to June 2020, SMETS 2 installations were down 87% quarter-on-quarter to only 10,000 meters being connected.

Commitment	Status	Forecast completion
7.6 Trial the potential for combining smart grids and smart meter data to provide additional information services	✓ On Track	2021-22

— In 2019-20 we continued with two innovation projects (that commenced in 2018-19) to make advanced use of smart meter and smart grid data. The projects aim to take the limited data sets we have available and use them to improve our LV design processes and trial energy efficiency through voltage reductions.

— Our Smart Network Design Methodologies project aims to improve LV design and modelling tools with smart meter data being used to inform probability distributions for demand.
– The project was generally successful in providing a better understanding of how to model modern power networks and developing significantly improved demand modelling techniques across multiple voltage levels.
– However integrating smart meter data was unsuccessful due to the low numbers of second generation smart meters available from which to harvest data and the aggregation rules that prevented segregation of the phases needed for certain techniques on three phase systems.
– The outcome of the data privacy plan will determine the disaggregation level of the smart meter consumption data and we will investigate the integrating of smart meter data in to the LV design tool following the data privacy plan being approved.

— Our Boston Spa Energy Efficiency Trial is testing progressive voltage reductions as a method of minimising long term energy demand while staying within statutory voltage limits. Smart meter data will be required in order to monitor the local network in real time and we are working with local residents to try and ensure its availability.
– The project has been mobilised and the requirements for dynamic voltage reduction developed.
– So far, desktop studies around Boston Spa suggest that a static voltage reduction is not possible, as customers on some circuits would receive low voltage supplies. It may be possible to install voltage regulators on these circuits to address this issue.

Commitment	Status	Forecast completion
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

— At the start of the period we established contracts with our service providers to resolve defects identified through the smart meter roll-out on our behalf. We continue to work closely with them to ensure the arrangement delivers high quality service levels for our customers.

— We have continued to experience significantly higher smart meter defect rates than Ofgem's original forecast – 3.47% compared to the Ofgem assumption of 2%. Our service level agreement (SLA) performance for defect resolution is 83% for Category A and 91% for Category B (both against targets of 90%), having resolved almost twice as many defects than forecast.

— In 2018-19, we increased resourcing in our contact centre to create a dedicated smart team for responding to calls and online queries from Meter Operators and energy suppliers.

— We also implemented a database and reporting suite in the year to streamline the management of our remediation records for customer jobs.

Environment

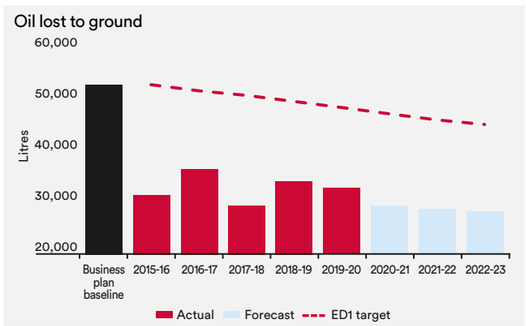
We are on track to deliver and in most cases go beyond our original environmental commitments, having set stretch targets in a number of key output areas following engagement with our stakeholders.

Commitment	Status	Forecast completion
9.1 Reduce oil/fluid leakage to ground by 15% by 2023	✓ Ahead	2022-23

— Our 2019-20 oil and fluid loss performance reflects a 1.5% reduction compared to prior year and a 36.5% reduction compared to our business plan baseline of 53,245 litres.

— We continue to invest in technologies such as perflourocarbon (PFT) leak detection. Since the start of ED1 we have invested £2.2m to have PFT Injected into 40 fluid-filled cable circuits – 8% of cables of this type in service across our network.

— Looking ahead, we will roll out an innovative self-healing cable additive solution aimed at improving network performance, generating cost efficiencies and reducing the impact of cable leaks. This was planned for February 2020 however it had to be delayed due to COVID-19 and is now scheduled for deployment in 2020-21.



— We are forecasting to continue our strong run and as such have set a stretch target to achieve a 47% reduction in oil and fluid loss by the end of the period relative to our ED1 business plan baseline.

Stretch target – reduce oil/fluid leakage to ground by 47%

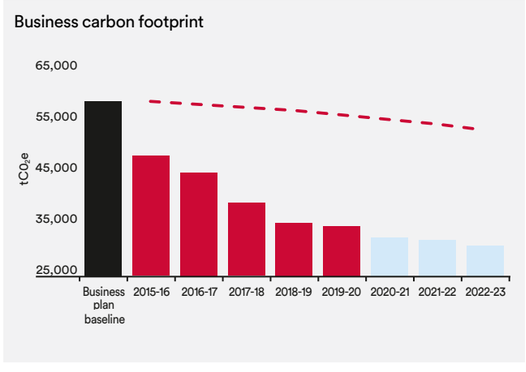
Commitment	Status	Forecast completion
9.2 Reduce our business carbon footprint by 10% by 2023.	✓ Ahead	2022-23

— Our 2019-20 carbon footprint performance of 33,365 tonnes represented a 4.7% reduction relative to 2018-19 and a 44.1% reduction relative to our business plan baseline of 59,700 tonnes.

— In 2019-20 we were awarded our carbon footprint ISO 14064 certification, 'Gold' standard, by the Certified Emissions Measurement and Reduction Scheme (CEMARS), as a result of demonstrating year-on-year reductions in our business carbon footprint since 2014.

— We continue to reduce fleet mileage assisted by our vehicle telematics systems and we are starting to introduce electric vehicles (EVs) into our fleet.

— We are maintaining our focus on Sulphur Hexafluoride (SF_6) gas emission reduction using thermal imaging technology to detect leaking switchgear and we are working with our service providers to reduce their fuel consumption and energy use.



— We continue to trial innovative solutions such as the use of mobile battery powered generators during power cuts to enable us to meet both our Customer Service and environmental targets.

— Looking ahead to 2020-21, our fleet will be refreshed with 19 new electric vehicles, (or 2.3% of our total fleet). For the remainder of the ED1 period, we're planning to purchase further electric vehicles, around 20 additional EVs and hybrids per year, we will be exploring the feasibility of installing solar panels to our depots and substations to reduce our own energy consumption.

— Rolling out new technology and continuing our improvement, we are targeting to reduce our business carbon footprint to 30,600 by 2023, an improvement of over 49% relative to our business plan baseline.

Stretch target – reduce our business carbon footprint by 49%

Commitment	Status	Forecast completion
9.3 Underground ~100km of overhead line in Areas of Outstanding Beauty (AONB)	Ahead	2021-22

— Since the start of the ED1 period, we have removed 68.7km of overhead lines in Areas of Outstanding Natural Beauty (AONB), 7.6km (12%) more than we had targeted by this point in the period.

— Our stakeholders have made it clear to us that this is a priority commitment area. As a result of our continuing engagement with Local Authorities and National Parks representatives, we have adjusted our plan to deliver an additional 20km by 2022-23, which represents an additional £2m investment.

— In 2019-20 we have invested £1.25 million to enhance the stunning landscape in and around Fountains Abbey & Studley Royal World Heritage Site. Working in partnership with Nidderdale Area of Outstanding Natural Beauty (AONB) and the National Trust, which operates the Fountains Abbey & Studley Royal estate, we are replacing 8km of overhead power lines with almost 10km of underground cable as well as building five new ground mounted substations, which will supply the local community.

— Looking ahead, we will be working closely with our key service provider to re-mobilise our works following the delay experienced during COVID-19 due to furlough of their staff. Our current forecast sees us delivering our original ED1 business plan commitment of 100km by December 2021, with the remainder of the programme to be completed by the end of March 2023.

Stretch target – **underground an additional 22.1km (120km in total)**

Commitment	Status	Forecast completion
9.4 Replace 134km of fluid-filled cables and use Perfluorocarbon tracers (PFTs) to quickly replace leaks	Delivered	2019-20

— The length of fluid filled cables replaced so far in ED1 is 35.2km ahead of our original phased profile of 110.1km, this takes our total to date in the ED1 period to 145.3km, which is more than we originally planned to do in the whole period (133.6km).

— The combination of fluid filled cable replacement and 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 2019-20, the first phase of our Bradford Cable project progressed to its final stages. The £30m capital programme will see 43km of underground oil filled cable replaced delivering benefit to over 160,000 of our customer, predominantly in the Bradford (~51,000 customers) and Girlington (~31,000 customers).

— We have set a stretch target to replace an additional 90.8km (beyond our original commitment of 133.6km) taking our total targeted fluid filled cable replacement to 224.4km by the end of ED1.

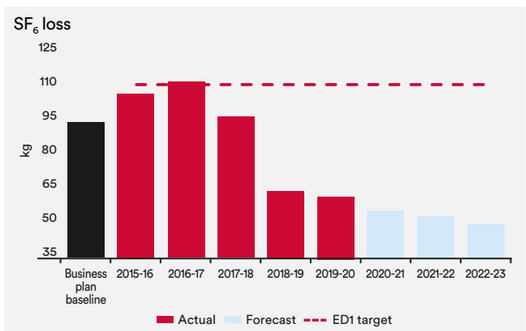
Stretch target – **deliver 224.4km of FFC replacement by the end of ED1 (+90km on the original target of 133.6km)**

Commitment	Status	Forecast completion
9.5 Maintain SF_6 losses as the volume of gas in our switchgear assets increases	Ahead	2022-23

— Our 2019-20 SF_6 loss emissions of 63.1kg was our lowest ever recorded gas loss and was 3.1% lower than last year (which itself was a best ever performance). This represents a 43.6% reduction in ED1 compared to our business plan baseline of 112kg.

— Through continued deployment of our SF_6 thermal imaging camera we have been able to accurately pinpoint leaks and target equipment for repair or replacement. Leveraging this technology we have set a more aggressive approach to containing SF_6 and we are on track to achieve our stretch target of 50kg.

Stretch target – **reduce SF_6 losses to 50kg by the end of ED1**



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

— We achieved a 96% success rate in 2019-20 for our annual streetworks reinstatement quality. It was the fifth year in a row that we have exceeded our 90% target.

— We currently chair the regional utility performance group which is seeking a national improvement in performance.

— During 2019-20 we actively participated in industry forums to assist with the development of the Street Manager, Plan & Manage Road Works, system which is expected to facilitate improved planning and coordination of our street works activities.

— Going forward, we'll maintain the standard of reinstatement using routine site inspections and targeted training. We're confident of delivering consistent performance levels in excess of our 90% ED1 target.

Commitment	Status	Forecast completion
9.7 Make sure reduction of electrical losses is explicitly factored into investment decisions for a wider range of assets.	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 and losses discretionary reward submissions. 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
9.8 Continue to operate a full revenue protection service	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 our 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 front line staff who now carry out investigation of electricity theft cases.

Finance

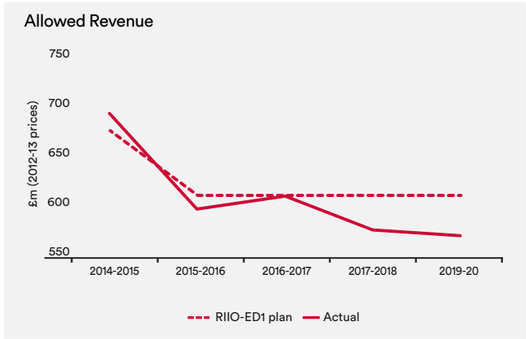
Our headline commitment in ED1 was to deliver more for less for our customers – we delivered a 14% price reduction at the start of the period and we are forecasting to exceed our output targets. We're also tracking ahead of our target to create 1,000 new job opportunities in the period.

Commitment	Status	Forecast completion
10.1 We will deliver an immediate 10% price reduction at the start of the period	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 below showing our allowed revenue.

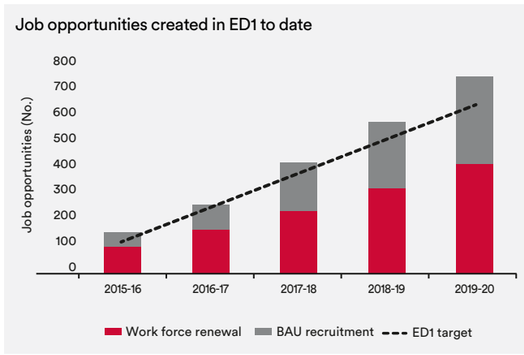


Commitment	Status	Forecast completion
10.2 We expect to create 1,000 job opportunities in the organisation during the ED1 period	Ahead	2021-22

— We have created 748 job opportunities in our region since the start of ED1, including 414 new recruits via our workforce renewal programme (WFR). As we are now at 75% of our target, we remain confident we will meet our expectation to create 1,000 job opportunities by the end of the period.

— In 2019-20 we created 177 job opportunities of which 92 were WFR recruits – all of which were apprentice and technical trainee roles in the operations part of our business.

— In the year, we started recruitment for new regional customer service managers to work alongside the operations managers in each of our six regions. The purpose of these is to drive the delivery of locally tailored customer service improvement plans.



Contact us regarding our plan

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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On twitter

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