Delivering on our promises

Stakeholder Report 2018–19
# Performance snapshot

## Network

<table>
<thead>
<tr>
<th>Category</th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of customers</td>
<td>3.9m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total DNO network length</td>
<td>96,494km</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Reliability & Availability

<table>
<thead>
<tr>
<th>Category</th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer interruptions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>Inc. exceptional events: 57.9</td>
<td>58.3</td>
<td>Achieved</td>
<td>▼</td>
</tr>
<tr>
<td></td>
<td>Exc. exceptional events: 52.4</td>
<td>63.7</td>
<td>Achieved</td>
<td>▼</td>
</tr>
<tr>
<td>Yorkshire</td>
<td>Inc. exceptional events: 48.3</td>
<td>51.7</td>
<td>Achieved</td>
<td>▼</td>
</tr>
<tr>
<td></td>
<td>Exc. exceptional events: 48.3</td>
<td>51.7</td>
<td>Achieved</td>
<td>▼</td>
</tr>
<tr>
<td>Customer minutes lost</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>Inc. exceptional events: 53.1</td>
<td>54.1</td>
<td>Achieved</td>
<td>▼</td>
</tr>
<tr>
<td></td>
<td>Exc. exceptional events: 43.4</td>
<td>54.1</td>
<td>Achieved</td>
<td>▼</td>
</tr>
<tr>
<td>Yorkshire</td>
<td>Inc. exceptional events: 36.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exc. exceptional events: 36.4</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

## Customer Satisfaction

<table>
<thead>
<tr>
<th>Category</th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Broad Measure of Customer Satisfaction score out of ten (rank out of six)</td>
<td>8.68 (5th)</td>
<td>8.2</td>
<td>Achieved</td>
<td>▼</td>
</tr>
</tbody>
</table>

## Incentive performance reward/(penalty) – IIS

<table>
<thead>
<tr>
<th>Category</th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>£m</td>
<td>£19.3m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>£/customer bill</td>
<td>£2.37</td>
<td></td>
<td></td>
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</table>

## Connections

<table>
<thead>
<tr>
<th>Category</th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time-to-quote (days)</td>
<td>41.3</td>
<td>42.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Social Obligations

<table>
<thead>
<tr>
<th>Category</th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Stakeholder Engagement and Consumer Vulnerability (SECV) score out of ten (rank out of 14 network companies)</td>
<td>7.01 (3rd)</td>
<td>8.50 (2nd)</td>
<td>Missed</td>
<td>▼</td>
</tr>
</tbody>
</table>

## Incentive reward

<table>
<thead>
<tr>
<th>Category</th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>£m</td>
<td>£1.6m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>£/customer bill</td>
<td>£0.20</td>
<td></td>
<td></td>
<td></td>
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</table>

## Financials

<table>
<thead>
<tr>
<th>Category</th>
<th>Northeast</th>
<th>Yorkshire</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrestricted domestic tariff charge</td>
<td>£75.91</td>
<td>£64.65</td>
<td>£69.07</td>
</tr>
<tr>
<td>Total expenditure</td>
<td>£161.5m</td>
<td>£206.9m</td>
<td>£368.4m</td>
</tr>
<tr>
<td>% of cost allowances</td>
<td>98%</td>
<td>92%</td>
<td>94%</td>
</tr>
<tr>
<td>% of cost allowances (ED1 to date)</td>
<td>96%</td>
<td>92%</td>
<td>94%</td>
</tr>
<tr>
<td>% of allowed revenue</td>
<td>63%</td>
<td>62%</td>
<td>63%</td>
</tr>
<tr>
<td>Dividends paid</td>
<td>£20.5m</td>
<td>£26.9m</td>
<td>£47.4m</td>
</tr>
<tr>
<td>Gearing</td>
<td>50%</td>
<td>47%</td>
<td>59.0%</td>
</tr>
<tr>
<td>RORE</td>
<td>8.5%</td>
<td>7.7%</td>
<td>7.8%</td>
</tr>
</tbody>
</table>

## 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. Trend ▼ getting better ▲ getting worse ▼ staying the same since 2017–18.
3. Ofgem target (see sections in the main body of the report for performance against our own targets).
4. Unplanned & unweighted figures. Indicative figures as at July 2019, 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.
A strong and consistent story of delivery in ED1 – even more for less
In our ED1 business plan we promised our customers we would deliver more for less. That means a better set of outputs across the board with lower spend on a like-for-like basis. Northern Powergrid has definitely made good on that commitment in the first half of the eight-year price control. We are on track to continue doing so and, in many cases, go even further than the original commitments we made. There are no surprises or storyline changes in our ED1 performance. Our cost forecasts continue to show that we expect our expenditure for the period to be in line with the challenging cost allowances that were set, whilst exceeding our output targets by 10–20%. As you would expect, we still have a lot of work to do to deliver on our commitments in the second half of the period, but we remain confident in our delivery plans.

Improving output performance across the board...
Our output measures tell the story of improvement. Keeping the lights on continues to be a top priority for our stakeholders and we are very pleased with our network reliability and availability performance in the period so far. Our 2018–19 performance, in a more challenging year of weather (including storms and a hot summer) represented a 33% reduction in unplanned customer minutes lost and 25% reduction in unplanned customer interruptions from power cuts relative to the levels at the time we wrote our business plan. We expect to build on this in the second half of the period.

Our customer satisfaction scores have undergone a step-change improvement in the period to date; overall satisfaction rating has improved by 5.5% in ED1 to date. But we know we still have more to do to achieve our goal of giving our customers the best service in the industry. Achieving the improvements that put us amongst the leaders in the industry is a top priority in the remainder of ED1. We plan to do that by building on the investments we have made in customer-facing enabling technology.

...whilst delivering benefits for the future
Supporting the development of the low carbon economy is at the heart of our ED1 business plan. We are delivering on our promises and expanding our capabilities as a distribution system operation (DSO). One of our key initiatives is our £83m ED1 smart grid enablers programme that is enhancing our capability to control and monitor our network in real time. In parallel we are preparing to make use of flexibility solutions, deploying active network management and using our innovation portfolio to trial new technologies such as vehicle to grid charging.

Reducing risks to security and resilience
Cyber security is still at the top of our risk register with the threat level continuing to grow and change shape every year. So far in the price control period, we have invested £9.6m in cyber defences that was not envisaged in our original ED1 business plan. That investment has put in place protections on behalf of our customers. Wider resilience of our network is also a key risk that we continue to prioritise. Physical security upgrades are a key part of our plans in the remainder of the period along with the completion of our increased, stakeholder-led flood defence programme that will see 254 sites upgraded – 63% more than originally planned.

Ensuring financial stability and attracting investment
We believe that our customers should expect to be served by companies that are rock solid financially – and we are proud to be such a company. We expect to exceed our output targets whilst living within the cost targets that Ofgem set. That will result in a real equity return to our shareholder of around 7.8%, which is at the lower end of the range of regulated network company returns that have attracted so much wider scrutiny in recent times. We see this performance as a fair return commensurate with the strong performance and the ongoing support that our investors continue to show to our region that is second to none.

As we look towards ED2, we are looking to see our regulator have the confidence to set regulatory price controls that encourage both ongoing investment and efficiency gains at a time when our customers, arguably more than ever, need investors to commit to investment in smart, flexible and high-performing networks.

We are proud to serve our customers and our region. We will continue to work hard to deliver on and outperform our ED1 plan whilst building on our engagement with our stakeholders to shape our business plans going forward.

I’m pleased to reflect on another strong year of performance in 2018–19 that takes us to the halfway point in the eight-year ED1 price control period.

We remain on track to deliver on our ED1 business plan commitments and in many cases go further for our customers than we originally promised.

A word from our CEO

Phil Jones
Chief Executive
We distribute 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 25,000 square km.
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. You can access our plan at yourpowergridplan.com

We are four years into the eight-year period covered by our plan and we’re making very good progress across the range of commitments we made. In this report, we provide an update on how we’re doing against our business plan commitments that run through to 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
Who we are

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

Our dedicated team, of around 2,700 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) 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. 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.

Northern Powergrid at a glance

- **8 million** customers
- **2,688** employees
- **64,122** substations
- **3.9 million** homes and businesses powered
- **6 operating regions** across the Northeast, Yorkshire and northern Lincolnshire
- **96,494km** of cable
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 a Distribution Network Operator (DNO) it is our responsibility to make sure that our network is able to safely and securely support these changes whilst maintaining high standards of reliability for our customers.

The industry is responding to this change by transitioning from a traditional DNO to a Distribution System Operation (DSO) model. At Northern Powergrid, we are helping to shape this transition to ensure it delivers value for our customers.

You can access our DSO v1.0 emerging thinking (Dec 2018), and DSO v1.1 development plan (Oct 2019), along with other supporting information by visiting: northernpowergrid.com/DSO

Where we fit in the electricity industry
Engagement is at the heart of developing and refining our plans.

Our business, and the world that we operate in (and our stakeholders live in), is rarely straightforward. With this in mind we see every conversation with our stakeholders as an opportunity to build relationships and increase mutual understanding across a range of issues. Over the last year we have seen multiple examples of how this approach is leading to more relevant and value added outcomes for our stakeholders.

We run an annual stakeholder engagement schedule, underpinning annual business planning and priority setting, whilst maintaining an ongoing cycle of engagement that ensures conversations lead to meaningful outcomes.

A meaningful engagement approach
It is important that as well as listening to our stakeholders, we act on their feedback, building the outputs of our engagement into our business plans.

Introduction
Engagement is at the heart of developing and refining our plans.

Measure and improve
- Activity measured and improved – checking back in with stakeholders.
- Processes and strategies reviewed and improved – annual audit.
- Outcomes measured and enhanced, scaled up, or learning fed into further improvements.

Identify and understand
- Using data to understand our regional DNA: who, where and how to target.
- Insight from stakeholder mapping, research and feedback.
- Understanding stakeholder constraints.

Engage
- Range of tailored channels to meet stakeholders’ needs and preferences.
- Engaging with a clear purpose.

Act and feedback
- Feedback shared within the business.
- Cross-cutting themes identified.
- Actions agreed and delivered.
- Outcomes fed back to stakeholders.

Examples of our safety engagement

Outputs
- Amending engagement to include NFU regional meetings.
- 60 plus farmers and agricultural workers engaged directly at NFU meetings.

Outputs
- 15,575 agricultural organisations in our regions.
- 31 agricultural asset incidents in 2018.
- NFU confirm that farmers are increasingly hard to reach.

Outputs
- Local agricultural college engagement.
- Face-to-face briefings following overhead line incidents.

Outputs
- Developed on-line safety induction communications – ‘SHOCK’ – what to do in the event of an overhead line contact.
Engagement with our stakeholders shapes our plans for the future. Throughout this report, we have included examples showing actions we have taken as a result of stakeholder engagement across all of our output areas.

**Our engagement...**

We hold a series of annual roundtable events with stakeholders.

**What our stakeholders said...**

At roundtable events in Gateshead and York, several stakeholders identified that people who are moving out of crisis often are left without effective support.

**What we’ve committed to...**

We increased our support for food banks, extending it to offer debt advice and income maximisation to help people recover post-crisis.
Our engagement at a glance
We have introduced new channels of communication and expanded the reach of our engagement this year.

<table>
<thead>
<tr>
<th>Face-to-Face</th>
<th>Social Media</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Events</strong></td>
<td><strong>Expert panels</strong></td>
</tr>
<tr>
<td>- Meetings</td>
<td>- External Stakeholder Panel</td>
</tr>
<tr>
<td>- Workshops</td>
<td>- Social Issues Expert Group</td>
</tr>
<tr>
<td>- Conferences</td>
<td>- Areas of Outstanding Natural Beauty Expert Group</td>
</tr>
<tr>
<td>- Community events</td>
<td>- Distributed Generation Expert Forum</td>
</tr>
<tr>
<td>- Drop-in sessions</td>
<td></td>
</tr>
<tr>
<td>- Round tables</td>
<td></td>
</tr>
<tr>
<td>- Site visits</td>
<td></td>
</tr>
<tr>
<td>- One-to-one briefings</td>
<td></td>
</tr>
<tr>
<td>- Surgeries</td>
<td></td>
</tr>
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</table>

4,000+ people engaged

<table>
<thead>
<tr>
<th><strong>Digital</strong></th>
<th><strong>Areas of research</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>600</strong> webinar views</td>
<td>- Unplanned power cuts</td>
</tr>
<tr>
<td><strong>100% webinar satisfaction</strong></td>
<td>- Flooding</td>
</tr>
<tr>
<td><strong>100+ stakeholders accessing incident data</strong></td>
<td>- Hard to reach – rural safety</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Newsletters and updates</strong></th>
<th><strong>Areas of research</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6,900 recipients</strong></td>
<td>- Tower block residents</td>
</tr>
</tbody>
</table>

15,000+ engaged

<table>
<thead>
<tr>
<th><strong>Expert panels</strong></th>
<th><strong>Areas of research</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- External Stakeholder Panel</td>
<td>- Smart metering</td>
</tr>
<tr>
<td>- Social Issues Expert Group</td>
<td>- Flexibility</td>
</tr>
<tr>
<td>- Areas of Outstanding Natural Beauty Expert Group</td>
<td>- DSO</td>
</tr>
<tr>
<td>- Distributed Generation Expert Forum</td>
<td></td>
</tr>
</tbody>
</table>
1. Safety

Our engagement...

Our executives met the Northeast and Yorkshire Board of the National Farmers Union in York and Walshford.

What our stakeholders said...

Discussions concluded that more action is needed to educate farmers about the risks of working in proximity to overhead lines, especially related to accidental contact.

What we’ve committed to...

We’ve supplied two new safety videos targeted at farming and haulage, produced a video for social media use and provided free signage for use by farmers. We are also attending more agricultural events to increase awareness.

“The NFU in Yorkshire and the North East region works very closely with Northern Powergrid, collaborating to boost knowledge amongst farmers and land owners about keeping safe near overhead power lines in order to reduce incidents and touch points on farms and in the field.

Building understanding about the dangers, and importantly what to do if there is contact between agricultural machinery and overhead power lines has helped reduce incidents this year – leading to safer farms and fewer incidents of loss of power.

We will continue to work closely with Northern Powergrid to continue to reduce incidents and boost farm safety in rural communities now and in the future.”

Adam Bedford,
North East Regional Director, National Farmers Union
Safety will always be our number one priority. It is central to all of our decision making and how we run our business.

Our Commitments

We’re pleased to report a strong year of safety performance in 2018–19 with all five of our ED1 business plan commitments remaining on track. That includes our headline commitment to halve our accident rate by the end of ED1 whilst remaining compliant with the regulations and guidance set out by the Health and Safety Executive (HSE).

In 2018–19, we continued our work to promote awareness of the dangers associated with electricity to a wide range of stakeholders; reaching out to farmers, lorry drivers, school children and Local Authorities by attending roadshows and schools. Additionally, we provided more information online to support our new and existing awareness campaigns.

How we’ve done in 2018–19

Our headline safety target is measured using the Occupational Safety and Health Administration (OSHA) rate. In 2018–19 we met our target of 0.31 for the year which translates to only seven incidents among a workforce of almost 2,700 people. Only one of those incidents involved electricity and injuries were minimised thanks to our employees wearing state of the art personal protective equipment.

We’re also doing everything we can to keep our employees safe on the roads. This year our fleet, which drove more than 17 million miles during the year, was involved in only 40 incidents. We’re working to improve this by delivering online and classroom training for everyone who drives our company vehicles. Telematics equipment has been installed in all of our fleet vehicles and we’re using the data to improve driver safety alongside deploying front and rear facing cameras.

We think a lot about the wellbeing of our employees, not just in terms of safety. We have stepped up our mental health training for employees as part of our Health & Safety improvement plan. This year saw us run various campaigns to raise awareness around mental health issues and we now have 65 members of staff trained in this area as mental health first aiders.

In 2018–19 invested in physical security upgrades at key points on our network including £1.15m at Critical National Infrastructure (CNI) sites. We have also invested with Crimestoppers to raise awareness aimed at reducing instances of metal theft. Although we do not have any specific allowance in ED1 to fund cyber security, we have responded to increasing threats by realising efficiencies elsewhere in the business, enabling us to invest £9.6m in improving our defences in the period to date. We have widened our approach to tackling cyber-crime this year, working closely with other companies in the Berkshire Hathaway Energy group.

In our business plan we committed to increasing awareness in our communities of the dangers of electricity. Our agricultural stakeholders can be hard to reach and often don’t have much spare time. We’ve been working with the National Farmers’ Union (NFU) to raise awareness. This year we delivered electrical safety awareness training to students at the region’s agricultural colleges, addressed Young Farmers groups at local meetings and partnered the agricultural machinery suppliers to distribute our safety information packs.

Another of our target groups is school age children. We continued to visit schools and built on the success we saw in 2017–18 from our partnership with the Scouts, making lesson plans available to teachers to engage with children on electrical safety. In 2018–19, we reached over 53,000 school children with our safety awareness programme, well ahead of the 40,000 per year target we set in our ED1 business plan.

Looking ahead

Although the industry landscape is evolving fast, one thing will never change: safety will always be our number one priority. We’ll continue to follow the guidance set out by the HSE and learn from every safety incident that affects our teams with the aim of reducing the risk of future incidents. We’ll continue to invest to deal with evolving cyber and physical security threats and explore new and innovative ways to raise awareness in the agricultural community.
1. Safety

Our business plan commitments

<table>
<thead>
<tr>
<th>Commitment</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Remain a leading safety performer, meeting all requirements and halving our accident rate by 2023.</td>
<td>On Track</td>
</tr>
<tr>
<td>1.2 Increase awareness in our communities of the dangers of electricity if not handled properly.</td>
<td>On Track</td>
</tr>
<tr>
<td>1.3 Keep safety as a central driver of investment decisions and appraisals.</td>
<td>Delivered</td>
</tr>
<tr>
<td>1.4 Promptly resolve any network safety issues arising from the smart meter roll-out.</td>
<td>On Track</td>
</tr>
<tr>
<td>1.5 Reduce the impact of metal theft, including improving substation security.</td>
<td>On Track</td>
</tr>
</tbody>
</table>

Going beyond our plan

Mental Health
New mental health awareness training for our employees.

65 mental health first aiders trained

School engagement
25% (10,000) more school age children engaged enabled by new online resources and partnerships.

10,000 more children engaged on safety

Our performance measures¹

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<tr>
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<th></th>
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</thead>
<tbody>
<tr>
<td>HSE compliance</td>
<td>2</td>
<td>Achieved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA rate</td>
<td>0.35</td>
<td>0.31</td>
<td>0.31</td>
<td>Achieved</td>
<td>0.31</td>
<td>0.22</td>
<td>▲</td>
</tr>
<tr>
<td>RIDDOR rate</td>
<td>0.24</td>
<td>0.12</td>
<td>&lt; 0.10</td>
<td>Missed</td>
<td>&lt; 0.10</td>
<td>&lt; 0.10</td>
<td>▲</td>
</tr>
<tr>
<td>Children reached through school safety education programme</td>
<td>52,817</td>
<td>53,676</td>
<td>40,000</td>
<td>Achieved</td>
<td>40,000</td>
<td>50,000³</td>
<td>▲</td>
</tr>
<tr>
<td>Overhead line contacts</td>
<td>28</td>
<td>54</td>
<td>&lt; 20</td>
<td>Missed</td>
<td>&lt; 20</td>
<td>&lt; 20</td>
<td>▼</td>
</tr>
</tbody>
</table>

¹Targets reflect ED1 business plan target unless otherwise stated.
² We received a minor enforcement notice for the Yorkshire licensee in 2017/18 as a result of two excavations carried out by a contractor organisation.
³Reflects a stretch target.
In 2018 we saw an increase in the number of high voltage overhead line contacts. Fortunately no one was seriously injured but this served as a trigger to step up efforts to make more agricultural businesses and their workers aware of the dangers of working around overhead lines and underground cables.

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**Outcomes and benefits**

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- knowledge and learning to be shared nationally with other network companies.

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**Outcomes and benefits**

- provided potentially lifesaving education in a simple format; and
- knowledge and learning to be shared nationally with other network companies.
2. Reliability and Availability

We have been working with Northern Powergrid since 2015 to develop more robust arrangements to prepare, respond and recover from flooding.

The ongoing work at Melrosegate is a great showcase of how Northern Powergrid are working with ourselves and partner agencies to better prepare for flooding.

Alex Brown, Emergency Planning Officer, York Council
We're ahead of our plan in delivering a more reliable network for our customers.

Our Commitments

At the half way point in the eight year ED1 price control period we are well ahead of our headline ED1 reliability and availability commitments, significantly exceeding our business plan targets for the fourth year running. The resilience of our network remains a key priority and our plans will see us go further than we originally committed to in the period.

How we've done in 2018–19

In 2018–19 we achieved a 25% reduction in the number of power cuts and a 33% reduction in their duration (compared to our 8% and 20% commitments respectively) relative to our business plan baseline. We've been able to achieve these improvements by investing in innovative technology such as automated power restoration systems alongside increasing our use of mobile generators and improving our deployment of restoration teams. Our performance in 2017-18 was a best-ever, and whilst 2018-19 didn't reach those heights due to the weather impacts, we were well ahead of target.

Our performance in restoring electricity supplies within 12 hours of them going off also continues to improve. We reduced the number of customers experiencing a power cut that lasts longer than 12 hours by 2% in the year, building on a 6% reduction achieved in 2017–18.

Sometimes we need to carry out planned power cuts to work on the network – this tends to be for maintenance or replacement of equipment. We committed to reducing the length of planned power cuts and this year the average duration reduced to less than three and a half hours (201 minutes) – a 4% reduction compared to 2017–18. Our customer satisfaction score for planned power cuts in 2018–19 was 90.2% placing us third in the industry.

Our network is more resilient than ever due to the work we’ve done on our flood defence programme. We upgraded flood defences at 38 sites during 2018–19, taking the total number of sites upgraded to 162 in ED1 to date, exceeding our original target of 141. Following stakeholder feedback, we expanded our commitment to defend a total of 254 sites in the period and we expect to complete our programme in full by December 2021.

Looking ahead

We will continue to deploy new technology on the network to reduce the number of unplanned power cuts and reduce the amount of time that power is out. Alongside high voltage automation and smart fuses at low voltage, we are deploying predictive fault detection as part of our innovation programme to identify and fix faults before they occur. Due to issues with the national smart meter programme, our access to smart meter data from our customers remains lower than it should have been. However, we are developing our systems to make use of the data for our customers when smart meter data becomes available.

Our customers’ requirements are changing and it’s important that we change with them. In 2018–19 we aligned our operating model to six regions to better drive performance. We have a new regional management team in place to ensure we are responsive to local needs.

We regularly assess the capacity of our network to make sure that customers can connect low carbon technologies (LCTs) such as solar panels and electric vehicles without triggering significant costs for network reinforcement. This year we identified four areas on our network that are suitable for Active Network Management (ANM) – an initiative which enables us to release capacity for LCTs and reduce reinforcement costs.

We're also freeing up capacity on our network through our voltage reduction programme. In 2018–19 we reduced the voltage at 41 substations, releasing 0.3GW of additional capacity, taking total capacity released to 2.0GW since the start of ED1.

1 Business plan baseline – 2012/13 performance
2. Reliability and Availability

Our business plan commitments

2.1 Achieve 8% fewer unplanned power cuts by 2023.
   - Ahead

2.2 Reduce the average length of unplanned power cuts by 20% by 2023.
   - Ahead

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

2.4 Planned power cuts to leave customers without power for less time, particularly during winter.
   - Delivered

2.5 Maintain the underlying health of the asset base and report on it annually.
   - Ahead

2.6 Target network improvements for our worst-served customers.
   - On Track

2.7 Ensure adequate network capacity for customers wanting to connect.
   - On Track

2.8 Increase the resilience of the network to flooding.
   - Ahead

2.9 Use smart meter alarm information to improve network performance and the information we provide to customers.
   - Behind (Due to external factors)

Going beyond our plan

CML – Customer minutes lost
A 20% point improvement in the duration of unplanned power cuts (CML)

40% Shorter

CI – Customer interruptions
A 22% point improvement in the number of unplanned power cuts (CI)

30% Less

Flood Defences
We’re upgrading 63% more sites than our original ED1 business plan commitment

98 more sites

Our performance measures

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</thead>
<tbody>
<tr>
<td>Unplanned customer minutes lost (Northeast)</td>
<td>39.9</td>
<td>43.4</td>
<td>51.7</td>
<td>Achieved</td>
<td>50.7</td>
<td>47.9</td>
<td>▼</td>
</tr>
<tr>
<td>Unplanned customer minutes lost (Yorkshire)</td>
<td>33.1</td>
<td>36.4</td>
<td>54.1</td>
<td>Achieved</td>
<td>53.0</td>
<td>50.0</td>
<td>▼</td>
</tr>
<tr>
<td>Unplanned customer interruptions (Northeast)</td>
<td>49.7</td>
<td>52.4</td>
<td>58.3</td>
<td>Achieved</td>
<td>58.0</td>
<td>57.1</td>
<td>▼</td>
</tr>
<tr>
<td>Unplanned customer interruptions (Yorkshire)</td>
<td>46.8</td>
<td>48.2</td>
<td>63.7</td>
<td>Achieved</td>
<td>62.7</td>
<td>60.0</td>
<td>▼</td>
</tr>
<tr>
<td>Planned customer minutes lost (Northeast)</td>
<td>4.8</td>
<td>4.3</td>
<td>7.4</td>
<td>Achieved</td>
<td>6.3</td>
<td>5.5</td>
<td>▲</td>
</tr>
<tr>
<td>Planned customer minutes lost (Yorkshire)</td>
<td>3.3</td>
<td>2.4</td>
<td>3.9</td>
<td>Achieved</td>
<td>3.4</td>
<td>2.9</td>
<td>▲</td>
</tr>
<tr>
<td>Planned customer interruptions (Northeast)</td>
<td>2.1</td>
<td>2.1</td>
<td>3.1</td>
<td>Achieved</td>
<td>2.7</td>
<td>2.3</td>
<td>▲</td>
</tr>
<tr>
<td>Planned customer interruptions (Yorkshire)</td>
<td>1.3</td>
<td>1.1</td>
<td>1.5</td>
<td>Achieved</td>
<td>1.3</td>
<td>1.2</td>
<td>▲</td>
</tr>
<tr>
<td>Flood defences</td>
<td>124</td>
<td>162</td>
<td>141</td>
<td>Achieved</td>
<td>141</td>
<td>254</td>
<td>▲</td>
</tr>
<tr>
<td>Health Indices score (monetised risk)</td>
<td>39.9%</td>
<td>52.6%</td>
<td>50%</td>
<td>Achieved</td>
<td>62.5%</td>
<td>110%</td>
<td>▲</td>
</tr>
</tbody>
</table>

1 Relative to our business plan baseline - 2012/13 performance.
2 Target reflects ED1 business plan target unless otherwise stated.
3 Reflects a stretch target made up of 15 carried forward from DPCR5, 141 original ED1 commitment and 98 additional in ED1.
4 Reflects a stretch target.
2. Reliability and Availability

Innovation project – Self-healing cables

Fluid filled cable leaks take time to locate and repair which can cause interruptions, impact the environment and increase costs for customers. Our collaborative innovation project with UK Power Networks is exploring self-healing cables.

The project which commenced in 2013 is funded under the Network Innovation Allowance. A mixture of polymer and resins are added to the cable fluid; when there is a leak and the material is exposed to oxygen, this causes a reaction which forms a thick mass around the break – a bit like blood forming a scab around a wound. The additive won’t seal all leaks and it works best for smaller leaks but it has the effect of reducing the impact of more significant leaks.

The laboratory testing phase completed in 2018–19 and demonstrated that self-healing cables are suitable for use in commercial, large-scale projects.

We are now progressing with the additive on our live network which will improve reliability, help to protect the environment and reduce the costs associated with leak location and the subsequent repair work.

---

**25% fewer and 33% shorter**

unplanned power cuts (relative to our ED1 business plan baseline)

**162**

sites upgraded as part of our ED1 flood defence programme

**2GW**

Capacity released through our voltage reduction programme implemented at 226 substations in ED1
3. Customer Service

Our engagement...
We use customer satisfaction surveys to give our customers a voice in influencing our services.

What our stakeholders said...
Users of our “Safe Dig” and disconnection quotation services were telling us that they wanted a simpler and faster service.

What we’ve committed to...
We implemented a new online self-service system for Safe Dig that has been well received.

We also changed our disconnection process to make it quicker and more flexible – since then acceptance rates have increased significantly.

In July 2018 we conducted market research to guide us on how to improve our communications during power outages that result from damage or equipment failure.

The research feedback suggested that we should explore:
— an increase in communications during a power cut, and
— targeting specific times to communicate.

We changed our text, IVR and web communication channels so that we communicate with customers at the most suitable times for them and on a more frequent basis.

We also launched a number of initiatives to improve the accuracy of our estimated restoration times.

“We seek and review customer feedback on a daily basis to understand where we are excelling and where we can improve further, also holding customer roundtable sessions to engage direct and focus on proposed improvements and trends in feedback.”

Neil Applebee, Director of People and Customer Service, Northern Powergrid
Striving to be the best network operator for Customer Service.

Our Commitments

Our overall Customer Service objective remains the same, to be the best in the industry at serving our customers. We’re working towards this, continuously improving our services using customer feedback. Our priorities remain to provide accurate and timely information; offering customers more ways to communicate with us; keeping our promises; and always working to give customers 10/10 interactions across all of our services.

How we’ve done in 2018–19

Halfway through the eight-year ED1 period we have seen a steady increase in customer satisfaction. In 2018–19, we achieved an overall satisfaction score of 86.8%, an improvement of 5.5% since the start of ED1. Despite that improvement our ranking against other UK distribution network operators dropped one position to fifth, strengthening our determination to make further improvements. We’re on the right track though, winning four awards at the 2018 Top 50 Companies for Customer Service including first place for our call service.

One way we’re seeking to improve our Customer Service is to make it easier for customers to get in touch with us and access the information they need. We’ve worked towards that goal by updating our social media and outbound text communications to provide clearer and more relevant information.

We introduced a customer relationship management (CRM) system in 2017 which has been a key driver in the improvements we have made so far. We now hold mobile numbers for 57% of our customers and email addresses for 65% enabling us to proactively contact customers (where appropriate). We have also added new functionality to support our contact teams in assisting customers with general enquiries and during unplanned power cuts.

Enhancing our services for vulnerable customers is a key priority for us. When a customer who is registered on our Priority Service Register (PSR) calls us, their call is routed directly to a dedicated team as opposed to our Interactive Voice Response (IVR) system. This has contributed to a 90.6% level of satisfaction among our PSR customers. We work hard to avoid receiving complaints, but when we do get them, we want to resolve them swiftly in a way that delivers the right outcome for our customers. We’re pleased to have been able to reduce the volume of complaints we receive in a year to 2,270 in 2018–19, a 50% reduction since the start of the ED1 period. In our business plan, we committed to resolving 80% of complaints within one day and 95% within 31 days. We are now resolving 80.1% in one day and 96.3% within 31 days, a 49% and 6% improvement since the start of the period respectively.

This year we have extended the hours our complaints team are available so that it is easier for our customers to contact us and work on resolving their issues. We have also given our staff who deal directly with customers more training on resolving complaints, with our ‘handyman service’ – a new way to put things right quickly when we receive a complaint.

Looking ahead

Our aim is to be rated amongst the leaders in customer satisfaction in the electricity industry. To achieve this, our main focus will remain our connections services where we’re working to provide a personal service for our customers and reduce small works lead times. One way we’re doing this is offering certain connections customers the option to receive a quote on site.

We’re also using technology to improve communications by introducing live webchat onto our website for all of our services, further developing our CRM system to provide timely updates on planned power cuts, and using machine learning technology to give our customers more accurate and timely information when there’s an unplanned power cut.

Our customer satisfaction performance since the start of the ED1 period
3. Customer Service

Our business plan commitments

3.1 Make Customer Service more reliable, better communicated and backed by slicker processes. Be faster, at no extra cost.

On Track

3.2 Use web-based technology to upgrade our process for general enquiries and minor engineering works.

Delivered

3.3 Continue to improve the quality and speed of our complaint resolution.

On Track

3.4 Provide better information to customers experiencing power cuts through voice or digital communication channels.

On Track

3.5 Use technology to enable our contact centre to move from being largely reactive to mostly proactive.

On Track

3.6 Make it easier for our customers to keep in touch – via internet, mobile, meetings, phone, email, social media, or text.

On Track

Going beyond our plan

Customer satisfaction:
5 percentage point stretch target set to achieve at least 90% overall customer satisfaction score by the end of the period.

≥91%
Overall satisfaction

Complaints resolution:
5 percentage point stretch target set to resolve at least 85% of complaints within one working day by the end of the period.

≥85% Day+1 complaints

Our performance measures¹

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</thead>
<tbody>
<tr>
<td>BMCS overall</td>
<td>86.3%</td>
<td>86.8%</td>
<td>85.0%</td>
<td>Achieved</td>
<td>&gt;85.0%</td>
<td>≥91.2%²</td>
<td>▲</td>
</tr>
<tr>
<td>BMCS power cuts</td>
<td>87.5%</td>
<td>88.1%</td>
<td>85.0%</td>
<td>Achieved</td>
<td>&gt;85.0%</td>
<td>≥91.3%²</td>
<td>▲</td>
</tr>
<tr>
<td>BMCS general enquiries</td>
<td>89.4%</td>
<td>89.3%</td>
<td>85.0%</td>
<td>Achieved</td>
<td>&gt;85.0%</td>
<td>≥93.3%²</td>
<td>▲▲</td>
</tr>
<tr>
<td>% of unplanned power cut contacts answered</td>
<td>98.7%</td>
<td>97.9%</td>
<td>99.0%</td>
<td>Missed</td>
<td>99.0%</td>
<td>99.0%</td>
<td>▼</td>
</tr>
<tr>
<td>% of unplanned power cut contacts answered within 20 seconds</td>
<td>90.6%</td>
<td>88.6%</td>
<td>90.0%</td>
<td>Missed</td>
<td>90.0%</td>
<td>90.0%</td>
<td>▼</td>
</tr>
<tr>
<td>Complaints resolved within 1 day</td>
<td>71.8%</td>
<td>80.1%</td>
<td>80.0%</td>
<td>Achieved</td>
<td>80.0%</td>
<td>≥85.0%²</td>
<td>▲</td>
</tr>
<tr>
<td>Complaints resolved within 31 days</td>
<td>93.3%</td>
<td>96.3%</td>
<td>95.0%</td>
<td>Achieved</td>
<td>95.0%</td>
<td>95.0%</td>
<td>▲</td>
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¹Targets reflect ED1 business plan target unless otherwise stated
²Reflects a stretch target
Innovation project – Resilient Homes

Power cuts cause problems for all of us, but they can seriously affect the health and wellbeing of particularly vulnerable customers. Even a short power cut can have a significant impact on customers who are on our Priority Services Register (PSR) or who rely on electrically powered medical equipment. This is compounded by the worry caused to these customers, and their carers, about how to cope in the event of a power outage.

With the help of National Energy Action, Northern Powergrid is working to deliver a modern solution using in-home batteries to maintain power in the event of a temporary break in supply. Subject to a confirmed feasibility study, we plan to install batteries into the homes of 30 customers relying on electricity to power critical medical equipment so we can assess the viability and effectiveness of the technology.
4. Innovation

Our engagement...

We have taken part in numerous roundtable discussions with stakeholders and held meetings with councils, companies, universities and individuals.

What our stakeholders said...

A common theme in these discussions was how we could support the growth in electric vehicle use.

What we’ve committed to...

— We are running an innovation project that considers using electric vehicles as mobile batteries allowing customers to sell energy from their vehicles and recharge when prices are lower.

— We published a document on ‘Maximising the value of electric vehicles for our customers’ in September 2019.
Innovation is at the heart of our business as we support the move towards a smarter and more flexible energy system.

**Our Priorities**

Innovation is vital in responding to external changes and new demands, improving services for our customers and responding to emerging risks. Our ultimate objectives of reducing costs and improving services for our customers drive our four core innovation priorities in ED1, which remain unchanged;

- developing a smarter and more flexible power grid;
- continuing to enhance our web-based and digital-enabled services;
- addressing issues of affordability; and
- delivering benefits from smart meters.

**How we’ve done in 2018–19**

In 2018–19, we continued to optimise and grow our innovation portfolio, investing all of our £3.7m Network Innovation Allowance (NIA) across a portfolio of 30 projects.

In order to ensure that we at the forefront of innovative thinking, we have continued to develop our innovation partnerships. We have strong relationships with Russell Group academic research institutions, such as Newcastle University, as well as businesses, such as our formal partnership with Nissan on electric vehicles. We are in partnership with Innovate UK to fund our large-scale vehicle to grid demonstrator project and we have had two projects, Gendrive and Barnsley Domestic DSR, funded by United Kingdom Research and Innovation (UKRI) and Department for Business, Energy and Industrial Strategy (BEIS) respectively.

Our stakeholders are key to the success of our innovation portfolio. Engaging at the outset of our projects and working in collaboration helps us to deliver the best possible outcomes.

**Developing a smarter and more flexible power grid**

We have been increasing the focus of our innovation portfolio on techniques to support distribution system operation. Our flagship £83.4m ED1 smart grid programme is building new capabilities on our network and we have a growing number of innovation projects trialling new and existing approaches to manage the network in real-time and increase flexibility.

**Enhancing our web-based and digital-enabled services**

We enhanced our digital services in 2018–19 with upgrades to our Customer Relationship Management (CRM) system to include additional service lines for our customers including power cuts and general enquiries. In addition, we developed an Autodesign solution – a 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.

**Addressing issues of affordability**

Consumer vulnerability is a key priority for Northern Powergrid and affordability continues to rank highly in our engagement with our stakeholders. In 2018–19, our Resilient homes project set out to combat this by exploring a domestic battery solution for ensuring that medically electrically dependent customers remain on supply if a fault occurs on the network.

**Delivering benefits from smart meters**

We’re exploring new ways to use smart meter data. Our Smart Network Design Methodologies project, aims to improve low-voltage design and modelling tools by using smart meter data to help calculate the demand at a distribution level.

**Looking ahead**

The move to a smarter and more flexible power grid will remain a key focus for our innovation activity in the remainder of ED1.

Automation and robotics present new opportunities to support our operations as well as working with our partners to develop integrated solutions across electricity, heat and transport.
4. Innovation

**£3.7m**
We invested 100% of our Network Innovation Allowance on 30 projects in the year.

We are investigating how the future electricity distribution system can support a customer-focused, decentralised and decarbonised energy system that delivers the optimal value for our stakeholders.

The early work of our innovation project in this area has shown how local energy markets could provide an incentive for customers with flexible load, such as electric vehicles, to follow and buy locally produced renewable energy. This has the potential to stimulate the subsidy-free, mass uptake of small-scale renewable generation, helping to drive energy system decarbonisation while providing low cost power to customers with flexible demand. The benefits to customers of participating in local energy markets are estimated to be in the order of £90bn during the period 2030 to 2050, significantly more than the benefit of providing services to the distribution network.

Local energy markets may develop alongside more connection of renewables to the transmission system from technologies such as offshore wind and nuclear generation. Investment strategies and Distribution System Operation service propositions are required for the different energy market transition pathways. In the next stage of our project we are considering key enablers to support our customers. The project is assessing the value available from local whole system optimisation, and how this may be delivered for our customers.

**Customer Led Distribution System – exploring the impact of markets on our services**

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An overview of some of our innovation projects.

**Safety**
- **Vehicle Telematics**
  Improving driver safety.
- **Fault current measurement**
  Improving electrical safety issues on overhead lines.
- **Lightning Prediction Tool**
  Improving lightning-related safety and reducing potential asset damage.
- **Centralock**
  Increasing security at our substations.

**Reliability & Availability**
- **Foresight**
  Repairing our LV network before a fault occurs.
- **Drones**
  Carrying out inspections of our overhead line assets to drive cost efficiencies.
- **Cyber security**
  Implementing critical infrastructure to defend against the increasing threat of cyber-crime.

**Environment**
- **Perfluorocarbon tracers**
  Speeding up cable oil leak detection.
- **Self-healing cable additive**
  Reducing cable fluid leakage.
- **Distributed storage and solar study**
  Developing our understanding of how solar PV generation and behind the meter storage can reduce costs for customers and their carbon footprint.

**Customer Satisfaction**
- **SilentPower**
  Deploying electric vehicle based, mobile battery generators in the event of power cuts.
- **Customer Relationship Management (CRM)**
  Transforming our customer interactions across a range of integrated communication channels.

**Connections**
- **Voltage reductions**
  Providing additional capacity for multiple small scale generators to connect to our local network.
- **AutoDesign**
  A web-based, self-service design tool providing customers looking to connect EV chargers with access to high-quality designs, in real-time, at lower cost.

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

Our engagement...
We meet regularly with charity partners and local councils to explore ways that we can support community initiatives.

What our stakeholders said...
Our stakeholders have clear priorities around education, anti-social behaviour, reducing carbon emissions and supporting vulnerable households.

What we’ve committed to...
We established partnerships with Teach First, Green Doctor, Citizens Advice and other community organisations. Through these partnerships we are able to offer vulnerable customers a range of advice. We also started programmes for tree planting and helping with energy efficiency.

“Our partnership with Northern Powergrid is a real success story. Together this year we are helping nearly 1,500 local people with their energy problems. Most of them are very vulnerable, in fuel poverty, and struggling to pay their bills. Some have been disconnected, and have no fuel supply at all. We help them sort out their problems, get the best deal for their home energy, and stay warm and safe.”

Shona Alexander, Chief Executive, Citizens Advice – Newcastle
Our use of an innovative data model has helped us identify over 227,000 more vulnerable customers.

Our Commitments

In our ED1 business plan, we committed to caring for our most vulnerable customers by communicating proactively and more frequently; building partnerships and raising awareness around the support that’s available; and providing network upgrades and innovative solutions that benefit our communities.

How we’ve done in 2018–19

To best help our vulnerable customers, we need to know who they are and what their needs are, then we need to engage with them in the right way and offer tailored services that best suit their needs.

In 2018–19 we built on the work we’ve already done in this area including developing a welfare data sharing agreement with Local Authorities and working in partnership with Northern Gas Networks to double what we can offer local communities on projects that tackle a variety of social issues.

This year we have been able to identify more of our vulnerable customers than ever before. We have developed a web based vulnerability data model that enables us to more efficiently identify and target areas in our region with higher numbers of vulnerable customers. As a result, the number of customers who registered for our Priority Services Register (PSR) grew to 902,000 in 2018–19 – an increase of 27%. In addition, we now hold a primary and alternative contact for over 90% of customers on our register and we continue to review every record at least every two years to make sure it’s still accurate.

Partnerships are key to broadening our reach. This year, we developed new partnerships to help us identify customers eligible for our PSR. We started working with 70 new community partners in the year meaning we were able to reach an additional 246,000 customers across our region, providing them with information and enhanced support.

We also used our partnerships to make our community funding go further. We teamed up with Northern Gas Networks to combine our community funds to increase the grants we offer to community groups in our region. There is now £100,000 of funding available over a 12 month period. In 2018–19, 14 community groups received funding to deliver programmes in areas covering energy efficiency, STEM school subjects, fuel poverty, PSR and safety.

Looking ahead

Moving forward we will continue to focus on enhancing our partnerships with Local Authorities following the success we’ve had in sharing data on social deprivation to tailor our services. Our ultimate aim is to put an agreement in place with every Local Authority in our region to support our vulnerable customers.
5. Social Obligations

Our business plan commitments

5.1 Route calls from Priority Service Customers directly to contact centre advisors, bypassing automated messaging. [Delivered]

5.2 Build partnerships with organisations to help us deliver our social programme. [On Track]

5.3 Promote and raise awareness of our Priority Services Register to and with other partner organisations. [Delivered]

5.4 Enhance our training for front-line staff providing additional support for Priority Service Customers. [Delivered]

5.5 In conjunction with Local Authorities, identify socially-deprived areas and prioritise our support towards them during a power cut. [On Track]

5.6 With others, explore the feasibility of community-level aggregated-demand response in return for a community rebate. [On Track]

5.7 Introduce friends and family register and ‘good neighbour’ scheme to support vulnerable customers. [Delivered]

5.8 Explore the possibility, with Northern Gas Networks, of upgrading to electrical connections in high-rise tower blocks for safety reasons. [On Track]

5.9 Explore solutions to connect rural communities to the network. [On Track]

5.10 Provide more customer support vehicles along with more services in them. [Delivered]

Going beyond our plan

£100k of funding now available for community groups in our regions, enabled by our partnership with Northern Gas Networks.

Upgrades at 300 low-rise buildings

We expect to go beyond our original ED1 plan in upgrading rising and lateral mains in high-rise, multi occupancy buildings. We are now targeting 300 low-rise buildings and other network assets in addition to upgrading services at 104 high-rise properties.

Using data to help the most vulnerable

We experienced a 27% increase in PSR registrations in 2018-19 following the implementation of our data project with Experian.

Our performance measures¹

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<tbody>
<tr>
<td>Stakeholder Engagement &amp; Customer Vulnerability (SECV) score</td>
<td>7.50</td>
<td>7.01</td>
<td>8.5</td>
<td>Missed</td>
<td>8.5</td>
<td>8.5</td>
<td>▼</td>
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<tr>
<td>PSR power cuts (customer satisfaction)</td>
<td>—</td>
<td>90.6%</td>
<td>&gt;85.0%</td>
<td>Achieved</td>
<td>&gt;85.0%</td>
<td>≥85.0%</td>
<td>▲ ▼</td>
</tr>
<tr>
<td>PSR power cuts (restoration within 6 hours)</td>
<td>—</td>
<td>95.5%</td>
<td>95.0%</td>
<td>Achieved</td>
<td>95.0%</td>
<td>95.0%</td>
<td>▲ ▼</td>
</tr>
<tr>
<td>PSR power cuts (restoration within 9 hours)</td>
<td>—</td>
<td>98.1%</td>
<td>98.0%</td>
<td>Achieved</td>
<td>98.0%</td>
<td>98.0%</td>
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¹Targets reflect ED1 business plan target unless otherwise stated.
²New measures introduced in 2018–19
5. Social Obligations

Innovation project – Silent Power

We are working with two dynamic UK SMEs, Hyperdrive Innovation and Offgrid Energy, to develop a new electric response vehicle with an onboard energy storage system (ESS) to power homes while their electricity supply is being restored. The project offers a quieter, cleaner alternative to the diesel-powered generators. It 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.
Our process improvement team revised our connections application form and guidance to simplify the documentation and make it clear what information is mandatory. The revisions were tested with customers who had provided the feedback to ensure the changes had the desired effect.

Our customer facing connections staff identified improvements that would allow customers to more easily provide the information we need.

Our colleagues pick up feedback from our customers on our services during their day-to-day interactions.

“"We have implemented enhancements in our technology, improved communication approaches and enhanced processes such as our quote on site facility for our small works connections customers on the back of feedback received from our customers where they have asked for improved communication and speed of response.”

Andy Bilclough,
Director of Field Operations, Northern Powergrid
Our service improvements in connections have resulted in a 7.9% improvement in customer satisfaction in ED1 to-date.

Our Commitments

We’re on track to meet our commitment to reduce routine small works connections lead times by 30% by the end of the ED1 period. For the fourth consecutive year we completed all of the actions outlined in our Incentive on Connections Engagement (ICE) plan, developed with our connections stakeholders, resulting in another zero ICE penalty outcome from Ofgem. Our customer satisfaction scores improved again and we have Active Network Management (ANM) schemes that are helping to reduce costs for customers wanting to connect low carbon technologies to our network in constrained areas.

How we’ve done in 2018–19

We’re pleased to report that 2018–19 has continued our trend of improvement across our connections services.

For small works connections, we achieved three of Ofgem’s four lead time targets, missing only Time To Quote (TTQ) for small project demand connections (LVSSB) largely due to the lead time for site visits we offered. We also narrowly missed our customer satisfaction target of 85.0%, scoring 84.9% which showed an overall improvement against last year’s score but only placed us in fifth when ranked against other DNOs. We know there are more improvements to be made but we are confident our focus on providing a personal service backed by technology solutions will help us achieve our targets.

The work we’ve been doing on delivering our ICE plan resulted in a zero penalty from Ofgem for the fourth year in a row. The plan consists of action points that we develop with our connections stakeholders and, in 2018–19, we delivered all 22 actions in our plan. After engaging with stakeholders again, we have set 12 further actions for 2019–20 including running electric vehicles connection workshops, providing constraint and curtailment information (which relates to changes in the output of generators) and improving our upfront engagement.

We are making good progress with our commitment to strengthen our tailored framework for connections customers with large projects. We have continued to engage with our stakeholders in 2018–19 to help shape our approach following the introduction of our single point of contact model in 2016–17.

We continue to develop our customer-led smart grid. A key part of this is constantly assessing the capacity of our network to make sure that customers can connect low carbon technologies (LCTs) such as solar panels and electric vehicles, at as low cost as possible. This year we identified four areas on our network that are suitable for Active Network Management which enables us to release capacity and reduce reinforcement costs. We have also continued to regularly update our network capacity heat maps so customers who want to connect LCTs have access to the most up-to-date information.

We are committed to supporting competition in connections to improve the range of options available to our customers. 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. We continued to strengthen our fully independent quality assurance audits for all connections to our network regardless of who carries out the work. Where an ICP or IDNO lacks sufficient accreditations to carry out work, we offer to do it for them.

Looking ahead

In the second half of the ED1 period, we will build on our improvements to date to enhance our connections services for our customers. This includes our new ‘quote on site’ service for small works connections and low voltage budget tool which enables customers to get access to estimated prices for potential new connections. We will also continue to build our tailored offering for regular customers.

22 actions completed in our 2018–19 ICE plan – zero penalty outcome

99.8% Guaranteed standards success rate in 2018–19 for quotations issued to our medium and large customers

84.9% Connections customer satisfaction for small works
### Our performance measures

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<tr>
<td></td>
<td>84.3%</td>
<td>84.9%</td>
<td>&gt;85%</td>
<td>Missed</td>
<td>&gt;85%</td>
<td>▲</td>
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<tr>
<td>BMCS connections – quotations</td>
<td>84.3%</td>
<td>85.0%</td>
<td>&gt;85%</td>
<td>Missed</td>
<td>&gt;85%</td>
<td>▲</td>
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<tr>
<td>BMCS connections – delivery</td>
<td>84.3%</td>
<td>84.7%</td>
<td>&gt;85%</td>
<td>Missed</td>
<td>&gt;85%</td>
<td>▲</td>
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<tr>
<td>Average time to quote (LVSSA)</td>
<td>7.9</td>
<td>6.6</td>
<td>8.2</td>
<td>Achieved</td>
<td>4.8⁴</td>
<td>▲</td>
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<tr>
<td>Average time to quote (LVSSB)</td>
<td>16.5</td>
<td>13.8</td>
<td>11.7</td>
<td>Missed</td>
<td>7.8³</td>
<td>▲</td>
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<tr>
<td>Average time to connect (LVSSA)</td>
<td>49.6</td>
<td>41.3</td>
<td>42.1</td>
<td>Achieved</td>
<td>39.3³</td>
<td>▲</td>
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<tr>
<td>Average time to connect (LVSSB)</td>
<td>58.3</td>
<td>49.1</td>
<td>52.7</td>
<td>Achieved</td>
<td>47.9³</td>
<td>▲</td>
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▲ improving ▼ worsening ▲ staying the same

1 Targets reflect ED1 business plan target unless otherwise stated.
2 Reflects a stretch target.
3 New Ofgem lead time targets.
Electric vehicles (EVs) are set to become the dominant form of personal motorised transport over the next 20–30 years, driven by technology advancement, electrification policies and economics. We are working to enable the electrification of transport more generally (not just electric vehicles) to ensure it is for the benefit of all of our customers. As we transition to the role of distribution system operator (DSO), we are seeking to unlock the full potential of distributed energy resources, including EVs.

The actions we are taking to enable the electric transport future are being informed by our local stakeholders. Our events and direct engagement with over 20 Local Authorities are guiding our work and nationally, we are also working with the industry through the ENA, Government and Ofgem.

We are also running a numbers of innovation trials for new commercial and technical solutions to see how smart charging and vehicle-to-grid (V2G) technology could be a source of customer flexibility that may help us to manage the system. Early findings have been rich with information and we have updated our network planning standards to reflect observations the network impact of customers’ charging behaviours.

More information can be found on our website.
Banks Renewables have really appreciated the Northern Powergrid DG owner operator forums. We have found them an excellent opportunity to discuss operational issues and future plans with technical leaders and senior managers from Northern Powergrid. As an owner and operator of 6 wind farms connected to Northern Powergrid’s networks the forums help us to ensure efficient co-ordination and take opportunities for the future.

Dan Thomas,
Grid and Operations Manager, Banks Renewables

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7. Smart Energy

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Our engagement...

Leeds City Council has the highest proportion of high rise residential buildings across the area we operate – Northern Powergrid and the Local Authority met to discuss refurbishment of the buildings.

What our stakeholders said...

Discussions made it clear that the co-ordination of plans for refurbishing high rise properties between building owners and service providers like Northern Powergrid is critical to make faster progress, while mitigating the impact on residents.

What we’ve committed to...

We developed a technology solution for monitoring the condition of the equipment we have in high rise buildings and adapted our processes to engage with developers as they plan their work.

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“Banks Renewables have really appreciated the Northern Powergrid DG owner operator forums. We have found them an excellent opportunity to discuss operational issues and future plans with technical leaders and senior managers from Northern Powergrid. As an owner and operator of 6 wind farms connected to Northern Powergrid’s networks the forums help us to ensure efficient co-ordination and take opportunities for the future.”

Dan Thomas,
Grid and Operations Manager, Banks Renewables
Our investment is laying the foundations for our customer-led smart grid.

Active Network Management (ANM) is another important part of 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 we need to. 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. This year we have identified four new areas of our network that are suitable for Active Network Management.

At a national level, the smart meter roll-out programme continues to face technical issues and delays with the Government announcing in September 2019 that it is extending the deadline by four years to 2024. Despite this, we have continued our work to prepare for realising benefits for our customers. This has included expanding our contact centre to include a new smart meter team to handle incoming customer queries (both via telephone and online) and enhancing our systems so they are ready to receive smart meter data.

We narrowly missed our target of dealing with 90% of smart meter defects within agreed timescales in 2018–19. We fell 1% short of our target but handled three times the number of defects than Ofgem forecast in setting the 90% target.

Looking ahead

We'll continue to increase our smart grid investment in the remainder of the ED1 period to deliver our 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 our internal readiness to realise benefits for our customers.
7. Smart energy

Our business plan commitments

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**

7.2 Invest £52m in smart grid network reinforcement that pays back by 2023 through avoiding £86m of traditional reinforcement – a net saving of £34m compared with traditional reinforcement methods.  

**Behind (Due to external factors)**

7.3 Provide opportunities for customers to participate in demand-side response to reduce the cost of running the network.  

**On Track**

7.4 Modify our trading and Customer Service systems to realise benefits from the new smart meter data.  

**On Track**

7.5 Use smart meter data to optimise network investment and reduce losses.  

**Behind (Due to external factors)**

7.6 Trial the potential for combining smart grids and smart meter data to provide additional information services.  

**On Track**

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**

Going beyond our plan

Automated Power Restoration System (APRS)  
Implemented APRS technology at substations – restoring over 245,000 customers’ power within 3 minutes.

245,000 customers restored

Our performance measures¹

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<tbody>
<tr>
<td>Smart grid investment</td>
<td>6.8</td>
<td>13.6</td>
<td>46.7</td>
<td>Missed</td>
<td>56.3</td>
<td>83.4</td>
<td>▲</td>
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<tr>
<td>(Cumulative, £m, 2012–13 prices)</td>
<td></td>
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<tr>
<td>Smart meter intervention performance</td>
<td>86%</td>
<td>89%</td>
<td>90%</td>
<td>Missed</td>
<td>90%</td>
<td>90%</td>
<td>▲</td>
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<tr>
<td>(Cat A &amp; B defects)</td>
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★ improving ▼ worsening ▲ staying the same

¹Targets reflect ED1 business plan target unless otherwise stated.
7. Smart energy

£13.6m
Smart grid expenditure in ED1 to date.

849 units
Over 500 smart grid units were installed in 2018–19 – taking our total to 849 for ED1 to date.

Innovation project – Activating Community Engagement (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.

2,000 players took part over two years resulting in energy reductions of up to 4.9KW. The app encouraged players to turn off appliances such as electric vehicles, fish tank heaters, caravans and hot tubs.

Prizes of up to £350 per month were awarded across the group of customers participating at that time.

Our findings showed that there is direct correlation between the use of smart technology and changes in customer energy usage.

Full detail on our findings can be found on the project’s dedicated webpage npg-ace.com
8. DSO – Distribution System Operation

Our engagement...

We shared our plans and consulted with our stakeholders to help shape our plans for the future. (January 2019 – DSO event, London).

Our stakeholders were keen to understand:
— How DSO development will impact consumer vulnerability,
— The principles of transparency, neutrality and resilience
— Active Network Management and flexibility
— The increased uptake in electric vehicles
— Future whole system and making use of data

What our stakeholders said...

What we’ve committed to...

— We held six stakeholder led round tables covering topics such as energy system changes, innovation and climate change.
— We updated our DSO development plan and published this in our DSO v1.1 document (October 2019).

“Operating as a DSO means 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”.

Patrick Erwin,
Policy & Markets Director, Northern Powergrid
We have increased our engagement and accelerated our programmes around customer flexibility and smart grid enablement.

Our existing duties as a DNO already require us to operate an efficient local electricity system. This encompasses many aspects of DSO; however, 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 the other industry players, Ofgem and Government on how this should be developed.

In 2018–19, we launched an expression of interest at nine locations across our network. We received a response for 22 assets across the nine locations, with 16MW identified (against the 12MW sought).

We are running a further assessment on the assets and we will publish our findings within the Distribution Energy Future scenarios report at the end of 2019.

3. Building new capabilities
Laying the foundations...

Smart grid enablers
— Our £83 million 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.
— In ED1 to date, we’ve invested £13.6m installing 849 smart grid units. These include:
— 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 our control centres to substations (both primary and secondary SCADA networks), and
— installing low voltage (LV) monitoring across the network.

Looking ahead
We will continue to progress our customer flexibility procurement programme, ensuring our processes are neutral and transparent by sharing information and metrics.

We will also build on our existing partnership with Leeds Open Data Institute for load forecasting.
Since 2017, we sought ideas from all corners of industry and from our diverse customer base to help set our direction for the transition to a DSO. We held events tailored for different audiences and increased our reach through using live web casts.

In December 2018, we published our emerging thinking which triggered a new round of stakeholder conversations. Broadly speaking, our stakeholders told us to continue on the course we had set. Additional feedback on specific points has helped us revise our plans.

Since then we have collaborated with our customers and stakeholders to understand what investment they value most from Northern Powergrid. We are planning further collaboration to expand on this, at a more granular level, to understand whether we should be accelerating some of our initiatives. The summary conclusions are:

- reliability of the network continues to be a top priority;
- our stakeholders support our commitment to a plan for an inclusive energy system transition.
- preparing for the future is also important, but needs to be balanced with the other priorities – investment needs to be fully justified and balanced against other priorities.
8. DSO

Our future plans

1. Guiding principles
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;
— providing 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.

2. Engagement

Engagement to support specific parts of our DSO plan

Feedback from the Open Networks project has informed our engagement strategy. This includes a mixture of high level reviews of progress and more technical sessions that focus on individual aspects of DSO. Since December 2018, we have held focused engagement sessions on key themes, including energy system data, innovation, retail market interface with DSO, climate change, the challenges and interdependencies of decarbonising heat, and clean air zones and low emission vehicles. We are now preparing for specific engagement on our load forecasting process and on our consumer vulnerability approach. Putting customers at the heart of the transition is a theme that will run through all our conversations.

Customer Engagement Group

This new group, established in Autumn 2019, will scrutinise and challenge our business plans for the RIIO-ED2 period including our plans for providing DSO services. The 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 and that we facilitate the transition to a low-carbon economy.

Planning for the long-term starts now

Prompt decisions are required so that we can produce plans to deliver on a clear system optimisation mandate and continue to meaningfully engage with our stakeholders to strengthen these plans in accordance with feedback received.

3. Our proposed seven themes for a social inclusive DSO plan

- Realising the opportunities of decarbonisation in the north of England
- Improving the reliability of the network
- Supporting a local, greener, cheaper electricity supply
- Advocating and deploying a socially inclusive customer flexibility offer
- Understanding long term distributional impact and advocating fairness
- Promoting a responsible, secure use of data
- A socially inclusive transition to distribution system operation

4. Increasing the efficiency of our investment: delivering more for less

5. Understanding long term distributional impact and advocating fairness

6. Advocating and deploying a socially inclusive customer flexibility offer

7. Promoting a responsible, secure use of data
9. Environment

Our engagement...

We meet National Parks and Areas of Outstanding Natural Beauty stakeholders at workshops twice a year to discuss ways of reducing our impact.

What our stakeholders said...

Our stakeholders recognised what was possible and identified more places where we could remove unsightly overhead lines than had been identified before.

What we’ve committed to...

We’ve committed to removing 22.1km more overhead lines in National Parks and Areas of Outstanding Natural Beauty in ED1.

“We’re really pleased to be involved in this partnership programme, which continues to deliver high-value schemes within the Howardian Hills Area of Outstanding Natural Beauty. As well as village-centre projects, one of my favourites is the undergrounding of an 11KV open-country line which was significantly impacting on views of the iconic Castle Howard landscape.

Northern Powergrid are heavily engaged with the programme, with the stakeholder meetings being attended by most of the staff involved, from design engineers to Directors”.

Paul Jackson,
Howardian Hills AONB Manager
We are on track to deliver, and in most cases exceed our environmental commitments.

Our Commitments

Our impact on the environment continues to reduce each year. We’re ahead of plan in five of our seven live environmental business plan commitments and on track to deliver the other two. We have reduced our carbon footprint, the amount of the greenhouse gas Sulphur Hexafluoride (SF₆) lost, oil/fluid losses and electrical losses on our network, whilst continuing to remove overhead lines in areas of outstanding natural beauty in our region.

How we’ve done in 2018–19

Reducing our carbon footprint is important to us and we know it’s important for our stakeholders which is why we committed to reduce our carbon footprint by 10% by 2023. We’re pleased to report that we are ahead of our commitment with this year’s result representing a 9.8% reduction compared to 2017–18. We’ve done this by reducing the amount of miles our fleet has driven by 12.4% (2.5 million miles), improving driving behaviours and fuel efficiency through using vehicle telematics, and using mobile generators more effectively during power cuts. This year’s performance has enabled us to set a new ambitious goal (higher than our original ED1 target) which means we are now aiming for an overall carbon footprint reduction of 40% by the end of ED1.

One way to reduce our overall carbon footprint is minimising the amount of the greenhouse gas Sulphur Hexafluoride (SF₆) that is lost into the atmosphere (SF₆ is 22,800 times more potent than CO₂). This year we were able to achieve a best-ever result in minimising SF₆ losses by using thermal imaging equipment to detect leaks in our switchgear, resulting in a year-on-year reduction of 32% in SF₆ emissions.

We’re also ahead of our commitment to remove 97.9km of overhead cable in Areas of Outstanding Natural Beauty by 2023. This year saw us remove 11.3km of cable which takes us up to 55.1km at the halfway point of ED1 (13% ahead of our original business plan target). Following engagement with our stakeholders, we have now committed an extra £2m for the rest of the period so we can remove an additional 22.1km of cable, 120km in total.

Looking ahead

We’re committed to reducing the amount of oil and fluid that is lost into the ground. One way this loss happens is leaking fluid-filled cables. We originally committed to replacing 133.6km of these cables by 2023 and we’re on track having removed 94.7km so far. In 2017–18 we stretched our target by an additional 72km. Now we’re pushing this again to remove an extra 18km that will take us to 224.4km by 2023 – 68% more than originally planned.

Alongside investing to reduce the risk of cable leakage, we committed to reduce oil/fluid leakage by 15% by the end of the period. In 2018–19 we lost 34,314 litres of oil and although this is well ahead of our ED1 target, it is a step back compared to our best ever performance in 2017–18. This year’s prolonged heat and drier weather caused ground shrinkage and movement leading to more incidents where oil was lost.

Whenever we excavate the ground to repair cables, the Local Authority conducts inspections to make sure we’re meeting national standards for street works quality. In our business plan we committed to at least 90% of inspections passing first time and we are ahead of this target. We aim to improve performance through effective contract management and the regional utility performance group which we currently chair.

We’re always working to understand the impact that electrical losses have on our network and we’ve been working in collaboration with other network operators to share our experiences of what works and what doesn’t. In light of this we have updated the way we approach design of our schemes to address the impact of network losses.

We’ll work with contractors to reduce their carbon footprint and adopt our low carbon strategies; introduce new electric vehicles to our fleet and more charging points at our sites; and explore the installation of solar panels at our depots and substations to reduce our own electricity consumption.

We will reduce oil lost from our network by further increasing our use of Perfluorocarbon tracers which we add to fluid-filled cables to detect leaks and accelerating the rate at which we remove fluid-filled cables from our network.

We’re committed to ensuring that stakeholders inform our environmental strategy so we’ll be offering more targeted workshops to give you the opportunity to have your say.
9. Environment

Our business plan commitments

9.1 Reduce oil/fluid leakage to ground by 15% by 2023.
   
   Ahead

9.2 Reduce our business carbon footprint by 10% by 2023.
   
   Ahead

9.3 Underground around 100km of overhead line in Areas of Outstanding Beauty (AONB).
   
   Ahead

9.4 Replace 134km of fluid-filled cables and use Perfluorocarbon tracers (PFTs) to quickly replace leaks.
   
   On Track

9.5 Maintain SF6 losses as the volume of gas in our switchgear assets increases.
   
   Ahead

9.6 Deliver faster and higher quality street works reinstatement when we dig up the street.
   
   On Track

9.7 Make sure reduction of electrical losses is explicitly factored into investment decisions for a wider range of assets.
   
   Delivered

9.8 Continue to operate a full revenue protection service.
   
   Withdrawn

Going beyond our plan

We have set a stretch target for undergrounding in Areas of Outstanding Natural Beauty of 120km in ED1. We have set a 40% 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 SF6 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

40% less

47% less

≤50kg

90.8km more

Our performance measures¹

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Carbon Footprint (tCO₂e)</td>
<td>39,535</td>
<td>35,673</td>
<td>57,713</td>
<td>Achieved</td>
<td>56,869</td>
<td>33,500²</td>
</tr>
<tr>
<td>Oil loss from all sources (litres)</td>
<td>29,562</td>
<td>34,314</td>
<td>49,822</td>
<td>Achieved</td>
<td>48,681</td>
<td>28,325²</td>
</tr>
<tr>
<td>Overhead lines removed in areas of natural beauty (km, cumulative)</td>
<td>43.7</td>
<td>55.1</td>
<td>48.9</td>
<td>Achieved</td>
<td>61.1</td>
<td>120.0²</td>
</tr>
<tr>
<td>Fluid filled cable replaced (km, cumulative)</td>
<td>68.1</td>
<td>94.7</td>
<td>92.0</td>
<td>Achieved</td>
<td>110.1</td>
<td>224.4²</td>
</tr>
<tr>
<td>SF₆ lost to atmosphere (kg)</td>
<td>98</td>
<td>65</td>
<td>112</td>
<td>Achieved</td>
<td>112</td>
<td>50²</td>
</tr>
<tr>
<td>Environmental agency incidents (count)</td>
<td>8</td>
<td>12</td>
<td>26</td>
<td>Achieved</td>
<td>25</td>
<td>7²</td>
</tr>
<tr>
<td>Street works quality (%)</td>
<td>94%</td>
<td>93%</td>
<td>&gt;90%</td>
<td>Achieved</td>
<td>&gt;90%</td>
<td>&gt;90%</td>
</tr>
</tbody>
</table>

¹Targets reflect ED1 business plan target unless otherwise stated.
²Reflects a stretch target
Innovation Project – Distributed Storage & Solar study

We have teamed up with Moixa and Energise Barnsley in a 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 near Barnsley and linked them in a virtual power plant.

On sunny days when generation is high and local demand is low, the batteries will be able to store energy rather than export it onto the electricity network. We 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.

The final project report is due in Quarter 4 of 2019–20.
Our engagement...

We run annual research with our customers to understand their relative priorities on key issues.

What our stakeholders said...

Feedback from customers continues to tell us that keeping bills low is a key priority, alongside keeping the lights on.

What we’ve committed to...

We continue to ensure that we make long-term choices that keep costs low for current and future customers, and when making those decisions. We always consider the impact on customer bills.

We have also undertaken work to help electricity retailers more accurately predict our charges for their customers.
10. Finance

We have four years’ track record of meeting our headline ED1 commitment to deliver more for less for our customers.

Our Commitments

Our customers tell us that keeping the lights on and keeping bills low are their top two 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 less than £801 per annum (22p per day) for our 24/7 service.

One of our other key commitments was to create 1,000 job opportunities in our region between 2015 and 2023. So far, nearly 600 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 provided us with the expertise to help ensure the resilience of our network, both now and in the future.

How we’ve done in 2018–19

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.

As one of the largest employers in our region, we took on 146 new recruits during 2018–19 including 82 apprentices and trainees as part of our Workforce Renewal programme. We are proud of our programme which is designed to oversee the training and development of the next generation of skilled engineers in our industry. We remain on track to meet our target of creating 1,000 job opportunities in ED1, paying particular attention to building new skills and capabilities in evolving areas such as smart grid technologies and cyber security.

We want our teams to be as diverse as the communities they serve. In March 2019, we published our latest annual gender pay gap report which showed that our male employees are paid 18% more per hour than our female employees. Although this improves on last year’s gap of 21.5%, we’re working hard to close the gap further. We would like to see an increase in the number of women in technical and professional roles.

To encourage this we are working with schools, colleges and universities in our region to build enthusiasm for Science, Technology, Engineering and Mathematical (STEM) subjects.

It is important that we play our part in society by contributing through tax. 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 string and transparent governance and showing respect for tax rules. We always expect to pay our taxes.

Looking ahead

Our ED1 cost forecasts show that we expect to spend in line with Ofgem’s allowances for the period as a whole whilst delivering 10–20% more outputs than targeted. In doing so, we will deliver more for less for our customers. We’ll continue with our recruitment programme, keeping an eye on how the industry is changing and being flexible with the skills we’re recruiting for, at the same time as seeking to build an increasingly diverse workforce.

£80 per year
The average cost to a Northern Powergrid customer in 2018–19

571 jobs
571 new job opportunities created in ED1 to-date

1 £79.97 Northern Powergrid average. Based on a typical domestic unrestricted tariff and Ofgem average consumption of 3,100kWh.
10. Finance

Our business plan commitments

10.1 We will deliver an immediate 10% price reduction at the start of the period.

10.2 We expect to create 1,000 job opportunities in the organisation during the ED1 period.

Going beyond our plan

Our key financial performance measures – returns, costs and outputs

Delivering more (Outputs) for less (Expenditure Vs Allowances)
We're currently forecasting to deliver 10–20% additional outputs while limiting our spend to the allowances set by Ofgem

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 7.8% based on Ofgem’s notional gearing calculation, which we believe is a fair and reasonable return for a company expecting to over-deliver on its business plan.

<table>
<thead>
<tr>
<th>Northern Powergrid RoRE (including financing and tax)</th>
<th>Notional gearing</th>
<th>Actual gearing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ED1 to date</td>
<td>ED1 forecast</td>
</tr>
<tr>
<td>RoRE – including holdco debt</td>
<td>6.7%</td>
<td>7.8%</td>
</tr>
<tr>
<td>RoRE – excluding holdco debt</td>
<td>6.9%</td>
<td>8.1%</td>
</tr>
<tr>
<td>Northeast</td>
<td>7.9%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Yorkshire</td>
<td>6.2%</td>
<td>7.7%</td>
</tr>
</tbody>
</table>

A comprehensive overview of our financial performance can be found in our Regulatory Financial Performance Reporting on our website northernpowergrid.com/yourpowergrid
Sarah Marsden joined us in 2015 after graduating with a Masters in Engineering from Durham University. She is currently a Project Engineer working on New Connections from our Follingsby site. In 2018 she won the Rising Star Power Graduate of the Year at the National Skills Academy: ‘People in Power’ Awards. Sarah’s dedication and passion for engineering means that she’s not only an asset to Northern Powergrid but also to the wider energy industry. Her commitment to encouraging and helping others start and build a career in engineering is inspiring and we’re incredibly proud of her.
**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.

Our customers continue to score us highly for our services in relation to cable plans and shrouding. Our customers give us lower ratings for disconnections and diversions, which are more complex services, with longer lead times. Satisfaction with our disconnections quotations service improved in the year following the implementation of our CRM system.

**Looking ahead**
We will embed our new technology-based process improvements in disconnections and focus on improving lead times – a key priority for our customers. Following the success of live web chat, we will continue to roll it out across our other service lines in 2019–20.

**How our customers scored us (out of 10)**

<table>
<thead>
<tr>
<th>Service</th>
<th>2018–19 performance</th>
<th>Ofgem target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable plans</td>
<td>8.9</td>
<td>10</td>
</tr>
<tr>
<td>Disconnections</td>
<td>8.0</td>
<td>5</td>
</tr>
<tr>
<td>Diversions</td>
<td>7.3</td>
<td>7</td>
</tr>
<tr>
<td>Shrouding</td>
<td>9.5</td>
<td>9</td>
</tr>
<tr>
<td>Other safety</td>
<td>9.0</td>
<td>6</td>
</tr>
<tr>
<td>requests</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of customers</strong></td>
<td>Number of customers electricity is distributed to in Northern Powergrid’s licensee areas: Northeast and Yorkshire.</td>
</tr>
<tr>
<td><strong>Total DNO network length</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Customer interruptions</strong></td>
<td>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. As above, excluding any interruptions caused by exceptional events.</td>
</tr>
<tr>
<td><strong>Customer minutes lost</strong></td>
<td>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. As above, excluding any interruptions caused by exceptional events.</td>
</tr>
<tr>
<td><strong>IIS – Incentive performance reward/(penalty)</strong></td>
<td>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 Intermittent Incentive Scheme (IIS). £ How much the above incentive reward (or penalty) will add to (or take off) the bill for an average domestic consumer in 2020–21.</td>
</tr>
<tr>
<td><strong>Overall Broad Measure of Customer Satisfaction Score</strong></td>
<td>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. £ How much the above incentive reward (or penalty) will add to (or take off) the bill for an average domestic consumer in 2020–21.</td>
</tr>
<tr>
<td><strong>BMCS – Incentive performance reward/(penalty)</strong></td>
<td>Value of the Ofgem Broad Measure of Customer Satisfaction (BMCS) reward/(penalty), a financial incentive on customer satisfaction, excluding stakeholder engagement rewards. £ How much the above incentive reward (or penalty) will add to (or take off) the bill for an average domestic consumer in 2020–21.</td>
</tr>
<tr>
<td><strong>Time-to-quote (days)</strong></td>
<td>The average number of days from a connection application being received to a connection quote being issued for single low-voltage minor connections (LVSSA). 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).</td>
</tr>
<tr>
<td><strong>Time-to-connect (days)</strong></td>
<td></td>
</tr>
<tr>
<td>Glossary</td>
<td>£/domestic customer bill</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Incentive performance reward/penalty – connections lead time</td>
<td>Value of the time to connect financial incentive for single low-voltage minor connections (LVSSA) and two to four minor connections (LVSSB).</td>
</tr>
<tr>
<td>Incentive on Connections Engagement (ICE) penalty (if applicable)</td>
<td>Value of the Ofgem ICE penalty: a connections engagement financial incentive for major connections customers (metered demand connections, metered distributed generation and unmetered connections).</td>
</tr>
<tr>
<td>Stakeholder Engagement and Consumer Vulnerability (SECV)</td>
<td>Northern Powergrid’s Stakeholder Engagement and Consumer Vulnerability (SECV) score and rank as part of Ofgem’s customer satisfaction measure.</td>
</tr>
<tr>
<td>Incentive reward (SECV)</td>
<td>Value of the Ofgem SECV reward, a stakeholder engagement financial incentive.</td>
</tr>
<tr>
<td>Unrestricted domestic tariff charge (for a typical domestic customer)</td>
<td>The distribution element of the bill for an average domestic consumer in 2018–19, 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 3,100kWh per annum. The calculation assumes 365 days in a year.</td>
</tr>
<tr>
<td>Total expenditure</td>
<td>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.</td>
</tr>
<tr>
<td>% of cost allowances</td>
<td>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).</td>
</tr>
<tr>
<td>% of allowed revenue</td>
<td>How much of its allowed revenues a company used to fund its Totex expenditure, before covering other day-to-day costs that are excluded from Totex and repayments of previous investments.</td>
</tr>
<tr>
<td>Dividends paid</td>
<td>Dividends paid in the year.</td>
</tr>
<tr>
<td>Gearing</td>
<td>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).</td>
</tr>
<tr>
<td>Credit rating</td>
<td>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 &amp; 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.</td>
</tr>
<tr>
<td>Actual Return On Regulatory Equity – RORE (vs Ofgem assumption of 6%)</td>
<td>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.</td>
</tr>
<tr>
<td>OSHA rate</td>
<td>In the USA the Occupational Safety and Health Administration (OSHA) accident rate records reportable work-related accidents including major incidents leading to absence from work and also less severe injuries where employees may experience restricted work duties or have prescription drugs issued as treatment or therapy. The OSHA rate is presented as reportable cases per 200,000 man hours. See <a href="http://www.osha.gov">www.osha.gov</a></td>
</tr>
<tr>
<td>RIDDOR rate</td>
<td>A UK accident rate that measures the number of accidents that are reportable under the UK’s Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR). These accidents are reportable to the HSE and include fatal, major injury and lost-time accidents resulting in over seven days absence from work. See <a href="http://www.hse.gov.uk/riddor">http://www.hse.gov.uk/riddor</a></td>
</tr>
</tbody>
</table>
## Performance snapshot – Northeast

### Network

<table>
<thead>
<tr>
<th></th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of customers</td>
<td>1.6m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total DNO network length</td>
<td>41.839km</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Reliability & Availability

<table>
<thead>
<tr>
<th></th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer interruptions (CI)</td>
<td>57.9</td>
<td>58.3</td>
<td>✔️ Achieved</td>
<td>▼</td>
</tr>
<tr>
<td>Exc. exceptional events</td>
<td>52.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer minutes lost (CML)</td>
<td>53.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inc. exceptional events</td>
<td>43.4</td>
<td>51.7</td>
<td>✔️ Achieved</td>
<td>▼</td>
</tr>
</tbody>
</table>

### Customer Satisfaction

<table>
<thead>
<tr>
<th></th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Broad Measure of Customer Satisfaction score out of ten (rank out of six)</td>
<td>8.74 (10th)</td>
<td>8.2</td>
<td>✔️ Achieved</td>
<td>▼</td>
</tr>
</tbody>
</table>

### Connections

<table>
<thead>
<tr>
<th></th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time-to-quote (days)</td>
<td>6.3</td>
<td>8.2</td>
<td>✔️ Achieved</td>
<td>▼</td>
</tr>
<tr>
<td>Time-to-connect (days)</td>
<td>41.2</td>
<td>42.1</td>
<td>✔️ Achieved</td>
<td>▼</td>
</tr>
</tbody>
</table>

### Social Obligations

<table>
<thead>
<tr>
<th></th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Stakeholder Engagement and Consumer Vulnerability (SECV) score out of ten (rank out of 14 network companies)</td>
<td>7.01 (3rd)</td>
<td>8.50 (2nd)</td>
<td>Missed</td>
<td>▼</td>
</tr>
</tbody>
</table>

### Innovation

In 2018–19 we spent £1.6m across 30 innovation projects in our Northeast licence area, funded by our Network Innovation Allowance. Our diverse portfolio spans our four innovation priorities for ED1: developing our smart grid, delivering smart meter benefits, developing our digital services and improving affordability.

### Financials

<table>
<thead>
<tr>
<th></th>
<th>Northeast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrestricted domestic tariff charge</td>
<td>£75.91</td>
</tr>
<tr>
<td>Total expenditure</td>
<td>£161.5m</td>
</tr>
<tr>
<td>% of cost allowances</td>
<td>98%</td>
</tr>
<tr>
<td>% of cost allowances (ED1 to date)</td>
<td>96%</td>
</tr>
<tr>
<td>% of allowed revenue</td>
<td>63%</td>
</tr>
<tr>
<td>Dividends paid*</td>
<td>£20.5m</td>
</tr>
<tr>
<td>Gearing**</td>
<td>A3/A/A-</td>
</tr>
<tr>
<td>ROE</td>
<td>8.5%</td>
</tr>
</tbody>
</table>

### 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 2018–19, measured by the Occupational Safety and Health Administration (OSHA) rate – 0.31 against a target of 0.31 — representing seven reportable incidents in a workforce of around 2,700.

### Environment

We achieved our oil leakage and business carbon footprint targets for 2018–19. We are also ahead of our target in putting overhead lines underground in areas of natural beauty in the ED1 period to date.

---

**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. Trend: getting better, getting worse, staying the same since 2017–18.
3. Ofgem target (see sections in the main body of the report for performance against our own targets).
4. Unplanned & unweighted figures. Indicative figures as at July 2019, 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.
## Performance snapshot – Yorkshire

### Network

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of customers</td>
<td>2.3m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total DNO network length</td>
<td>54,655km</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Reliability & Availability

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer interruptions (CI)²</td>
<td>48.3</td>
<td>63.7</td>
<td>Achieved</td>
<td></td>
</tr>
<tr>
<td>Customer minutes lost (CML)³</td>
<td>36.4</td>
<td>54.1</td>
<td>Achieved</td>
<td></td>
</tr>
<tr>
<td>Incentive performance reward/(penalty) – IIS⁵</td>
<td>£13.5m</td>
<td>£2.79</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Customer Satisfaction

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Broad Measure of Customer Satisfaction score out of ten (rank out of six)⁶</td>
<td>8.62 (13th)</td>
<td>8.2</td>
<td>Achieved</td>
<td></td>
</tr>
<tr>
<td>Incentive performance reward/(penalty) – BMCS⁷</td>
<td>£1.7m</td>
<td>£0.36</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Connections

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time-to-quote (days)⁸</td>
<td>6.8</td>
<td>8.2</td>
<td>Achieved</td>
<td></td>
</tr>
<tr>
<td>Incentive performance reward/(penalty) – connections lead time</td>
<td>£0.4m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentive on Connections Engagement penalty – ICE (if applicable)</td>
<td>£0.07</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Social Obligations

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Actual 2018–19</th>
<th>Target 2018–19</th>
<th>Status</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Stakeholder Engagement and Consumer Vulnerability (SECV) score out of ten (rank out of 14 network companies)</td>
<td>7.01 (3rd)</td>
<td>8.50 (2nd)</td>
<td>Missed</td>
<td></td>
</tr>
<tr>
<td>Incentive reward</td>
<td>£1.0m</td>
<td>£0.20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Innovation

In 2018–19 we spent £2.1m across 30 innovation projects in our Yorkshire licence area, funded by our Network Innovation Allowance. Our diverse portfolio spans 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 2018–19, measured by the Occupational Safety and Health Administration (OSHA) rate – 0.31 against a target of 0.31 – representing seven reportable incidents in a workforce of around 2,700.

### Environment

We achieved our oil leakage and business carbon footprint targets for 2018–19. We are also ahead of our target in putting overhead lines underground in areas of natural beauty in the ED1 period to date.

### Financials

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Yorkshire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrestricted domestic tariff charge</td>
<td>£64.65</td>
</tr>
<tr>
<td>Total expenditure</td>
<td>£206.9m</td>
</tr>
<tr>
<td>% of cost allowances</td>
<td>92%</td>
</tr>
<tr>
<td>% of cost allowances (ED1 to date)</td>
<td>92%</td>
</tr>
<tr>
<td>% of allowed revenue</td>
<td>62%</td>
</tr>
<tr>
<td>Dividends paid¹</td>
<td>£26.9m</td>
</tr>
<tr>
<td>Gearing¹</td>
<td>A3/A-/A-</td>
</tr>
<tr>
<td>Credit rating²</td>
<td>7.7%</td>
</tr>
</tbody>
</table>

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. Trend: “getting better” getting worse staying the same since 2017–18.
3. Ofgem target (see sections in the main body of the report for performance against our own targets).
4. Unplanned & unweighted figures. Indicative figures as at July 2019, 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 license 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 license companies. Overall relates to Northern Powergrid Holdings Company.
An update on our commitments in detail

Our ED1 Safety commitments
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.

1.1 Remain a leading safety performer, meeting all requirements and halving our accident rate by 2023.

- Our long-term safety performance remains strong, maintaining our place amongst the leaders in the industry and keeping us on track to achieve our headline commitment to halve our accident rate by 2023.
- Our accident rate in 2018–19 showed an improvement over the prior year with an OSHA accident rate of 0.31, in line with our ED1 business plan target. That equated to seven incidents in the year and of those, only one was electrical in nature and injuries were minimised as a result of our employees wearing the correct protective equipment.

- Our RIDDOR accident rate performance of 0.12 was fractionally adverse to our target of 0.10, incurring three reportable incidents in 2018–19.
- We continue to focus on our safety culture, reinforcing safety standards through leadership engagement and our safety champions programme.
- In 2018–19, we stepped up our mental health training for our employees as part of our Safety, Health improvement plan. We ran various campaigns to raise awareness around mental health issues and we now have 65 members of staff trained in this area.
- We maintained strong driving performance in 2018–19, incurring only 40 vehicle accidents across a fleet covering ~17 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, Health Improvement Plan will ensure we meet our commitment to halve our incident rate.

1.2 Increase awareness in our communities of the dangers of electricity if not handled properly.

- Our programme to raise awareness of the dangers of electricity expands every year and in 2018–19 we engaged over 53,000 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 with an estimated reach of 24,000 children in the year. We also issued 4,174 children with health and safety scout badges.
# ED1 commitments – Safety

<table>
<thead>
<tr>
<th>Safety</th>
<th>Status</th>
<th>Commentary</th>
</tr>
</thead>
</table>
| 1.2 Increase awareness in our communities of the dangers of electricity if not handled properly. (Continued) |          | — 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 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 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. We presented to the Balloon and Airship Association at their AGM to discuss safety around power lines for local enthusiasts. For road hauliers, we presented to members of both the Fleet Transport Association and the Road Haulage Association at their regional conferences, reaching 80% of hauliers through our campaign.  
— 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 revise these accordingly. In addition our routine awareness campaigns will continue to be part of our annual Safety, Health Improvement Plan. |
| 1.3 Keep safety as a central driver of investment decisions and appraisals. | Delivered | — 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 2018–19, we replaced over 41,444 service cut-outs, a 9% increase on the previous year, removing 1,883 units that did not comply with Electrical Safety, Quality and Continuity Regulation (ESQCR) safety standards. |
| 1.4 Promptly resolve any network safety issues arising from the smart meter roll-out. | On Track | — 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 500 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 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.  
— Looking ahead, we’re developing an application that will enable our engineers to proactively identify network equipment that could potentially delay the installation of smart meters. |
| 1.5 Reduce the impact of metal theft, including improving substation security. | On Track | — Levels of metal theft from our network remain low, despite there being some increase in theft during the summer of 2018 and early in 2019. in part due to the low price of copper but also the work we have done over many years with scrap metal dealers and the police. 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 our alarm receiving centre which we expect will be commissioned in 2019–20.  
— Looking ahead, we’ll continue to install deterrents such as electric fences at potentially vulnerable sites and we will be upgrading our substation locks. We are also implementing intruder detection technology that will link to our alarm receiving centre. |
Our ED1 Reliability & Availability commitments
We’re working to make the network more reliable in line with the commitments we made in our business plan and we’re ahead of our targets to reduce the number of power cuts by 8% and shorten their duration by 20%.

<table>
<thead>
<tr>
<th>Reliability &amp; Availability</th>
<th>Status</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.1 Achieve 8% fewer unplanned power cuts by 2023.</strong></td>
<td>Ahead</td>
<td>— We are outperforming the targets we set in our ED1 business plan on unplanned customer interruptions (CI) having achieved a 25% reduction relative to our business plan baseline in the period so far. — In 2018–19, we continued our investment in high voltage automatic fault restoration technology that automatically reconfigures the network in response to faults. We upgraded 64 additional primary substations in the year, taking the total number enabled with the technology to 190 in ED1 to date. — We expect fault prediction technology to play an increasingly important role in our plans going forwards. This new technology is moving from innovation to mass roll-out on the network.</td>
</tr>
</tbody>
</table>

*(New) Stretch target – reduce the number of unplanned power cuts by 30%.*

| **2.2 Reduce the average length of unplanned power cuts by 20% by 2023.** | Ahead | — We are outperforming the targets we set in our ED1 business plan having achieved a 33% 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, which we’re expecting to deliver CML levels that are at least 40% less than our business plan baseline by the end of the period. |

*(New) Stretch target – reduce the average length of an unplanned power cut by 40%.*

---

1 Relative to our ED1 business plan baseline – 2012–13 performance.
### ED1 commitments – Reliability & Availability

<table>
<thead>
<tr>
<th>Reliability &amp; Availability</th>
<th>Status</th>
<th>Commentary</th>
</tr>
</thead>
</table>
| 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 | • 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 halved the number of power cuts lasting more than 12 hours (51% reduction), with 2018–19 continuing this improvement (2.1% reduction achieved).  
• 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 12 hour power outages across our regions. |
| 2.4 Planned power cuts to leave customers without power for less time, particularly during winter | Delivered | • 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 2018–19, 97.5% of planned power cuts lasted no longer than eight hours and in the winter months we achieved our 4.5 hour target 83% of the time.  
• Customer satisfaction for our planned power cut service is high with our customers scoring us at 90.2% in 2018–19 (ranking 3rd in the industry), an improvement of 0.5 percentage points from 2017–18; and an increase of 4.6 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. We will deliver this by upgrading our Customer Relationship Management (CRM) system to provide more accurate and timely information and using our Customer Service vehicles to support vulnerable customers during outages. |
| 2.5 Maintain the underlying health of the asset base and report on it annually. | Ahead | • Our investment plans target ageing and highly-loaded assets in order to reduce the risk of failure.  
• We remain on track to deliver our business plan output targets for the ED1 period, tracking ahead (5.2%) of Ofgem’s asset health and criticality index measure for the period to date.  
• Our ED1 forecast is currently set to exceed our asset health and criticality target by 10–20% by the end of the period whilst spending in line with Ofgem allowances. |
### ED1 commitments – Reliability & Availability

<table>
<thead>
<tr>
<th>Reliability &amp; Availability</th>
<th>Status</th>
<th>Commentary</th>
</tr>
</thead>
</table>
| 2.6 Target network improvements for our worst-served customers. | ![On Track](https://via.placeholder.com/15/000/000) | — Ofgem define a worst served customer as a customer experiencing 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 three year period.  
— We measure our performance against the definition and we currently have no customers that fall into that category; however, we still focus on those customers who experience lower levels of service than others.  
— Technology is a key tool that we can use to address 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.  
  - using new technology to continuously monitor low voltage circuits and predict future faults together with their locations so that we are able move from reactive to proactive in our approach to fault management. |

| 2.7 Ensure adequate network capacity for customers wanting to connect. | ![On Track](https://via.placeholder.com/15/000/000) | — 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. We have three key supporting work streams:  
1. **Active Network Management (ANM)**  
   — We’ve trialled this at various locations on our network in the past, however our first replicable 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 – grid supply points at Keadby, Grimsby West, Creyke Beck and Saltend. ANM will enable us to continue to connect Distributed Generation in these areas without triggering significant connection reinforcement costs.  
2. **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 2018–19, voltage reduction took place at 41 sites taking our total to 342 sites in ED1 to date. 0.3GW of additional capacity was released in the year which takes us up to 2GW released in the period so far.  
3. **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 three years of ED1, this released 26MVA of demand and 21MVA of generation capacity.  
   — In 2018–19, we targeted a further 87 sites where customers were not using at least 75% of their demand or generation capacity. Unfortunately, no customers agreed to reduce their capacities following our approach.  
   — We will continue to run the programme in the second half of the ED1 period. |
2.8 Increase the resilience of the network to flooding.

**Status**

- Ahead

**Commentary**

- Flood resilience is a priority area for our stakeholders. We committed to making our network more resilient to flooding and have expanded our original business plan target to defend 156 sites, by a further 98 sites in ED1.

- Of these additional 98 sites, 45 were identified following a review of the industry flood resilience standard to incorporate the findings from the national flood resilience report and 53 were added following our own flood analysis (total additional investment of £11.1m). This takes our total number of sites targeted for upgrades during the RIIO-ED1 period to 254; a planned total investment of £35m.

- Delivery of our programme is ahead of target and in 2018–19 we upgraded defences at 38 sites at a cost of £9.3m. In ED1 to date we have spent £24.7m on upgrading flood defences at 162 sites, going beyond our original commitment of 141. We are aiming to complete our expanded ED1 programme by December 2021, well before the end of the period.

**Cumulative Flood Defences Installed**

- Original ED1 target
- Forecast
- Actual

2.9 Use smart meter alarm information to improve network performance and the information we provide to customers.

**Status**

- Behind

(© Due to external factors)

**Commentary**

- 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 problems relating to radio frequency noise between meters and telecoms network equipment.

- Approximately 1.7m smart meters have been installed for our customers which is about 40% of our customer base of 3.9m. Unfortunately, only 10,000 of those are second generation meters. That is well behind the original government programme.

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

- We actively support suppliers and their meter operators in delivering a safe and smooth roll-out. In addition to resolving network defects that may be preventing a smart meter installation we have authorised over 500 operatives to work on our network in ED1 to date.

- 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 also ensure 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.
Our ED1 Customer Service commitments

Overall customer satisfaction has improved by 5.5% since the start of the period but we have more work to do to achieve our goal of giving our customers the best service in the industry.

<table>
<thead>
<tr>
<th>Customer Services</th>
<th>Status</th>
<th>Commentary</th>
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</thead>
</table>
| 3.1 Make Customer Service more reliable, better communicated and backed by slicker processes. Be faster, at no extra cost. | On Track        | — Since the start of the ED1 period, we have achieved a 5.5% improvement in consistency of our communication across all our customer contact channels (including web, automated telephony system, social media and voice).  
— In parallel, we have matured our quality framework that helps our Contact Centre team consistently deliver high-quality customer conversations.  
— During 2018–19, we piloted a new customer rescue service whereby we proactively contact customers via text post an interaction with us and confirm satisfaction with our service. If customers are not satisfied with the service received we can put it right for them. |
|                                                                                  |                 | Rolling quarter customer satisfaction score (%)  
|                                                                                  |                 | Jan-15 74  
|                                                                                  |                 | Mar-15 89  
|                                                                                  |                 | May-15 86  
|                                                                                  |                 | Jul-15 83  
|                                                                                  |                 | Sep-15 80  
|                                                                                  |                 | Nov-15 77  
|                                                                                  |                 | Jan-16 92  
|                                                                                  |                 | Mar-16 89  
|                                                                                  |                 | May-16 86  
|                                                                                  |                 | Jul-16 83  
|                                                                                  |                 | Sep-16 80  
|                                                                                  |                 | Nov-16 77  
|                                                                                  |                 | Jan-17 92  
|                                                                                  |                 | Mar-17 89  
|                                                                                  |                 | May-17 86  
|                                                                                  |                 | Jul-17 83  
|                                                                                  |                 | Sep-17 80  
|                                                                                  |                 | Nov-17 77  
|                                                                                  |                 | Jan-18 92  
|                                                                                  |                 | Mar-18 89  
|                                                                                  |                 | May-18 86  
|                                                                                  |                 | Jul-18 83  
|                                                                                  |                 | Sep-18 80  
|                                                                                  |                 | Nov-18 77  
|                                                                                  |                 | Jan-19 92  
|                                                                                  |                 | Mar-19 89  
|                                                                                  |                 | Overall 89  
|                                                                                  |                 | Connections 89  
|                                                                                  |                 | Power cuts 86  
|                                                                                  |                 | General enquiries 83  
|                                                                                  |                 |  
|                                                                                  |                 | — Other key improvements implemented in the period so far include:  
— Launch of live web chat as a new contact channel for our customers.  
— Introduction of a dynamic online knowledgebase tool to provide customers with answers to frequently asked questions.  
— Launch of Customer Relationship Management (CRM) for Unplanned Power Cuts, giving our Customer Service agents access to all the information they need to provide customers 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 quality of our services while keeping costs down for customers – doing more for less.  
— Looking ahead, we’ll continue to upgrade and roll-out CRM web chat across our service lines. |
| 3.2 Use web-based technology to upgrade our process for general enquires and minor engineering works. | Delivered       | — 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 enquires services. This includes functionality enabling booking of appointments online, paying for services directly on our website, accessing safety information and reporting problems either with equipment at customer properties or on our network, such as vandalism or trees near overhead lines.  
— In 2018–19 we 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. |
3.3 Continue to improve the quality and speed of our complaint resolution.

On Track

The speed that we deal with customer complaints has improved year-on-year since the start of the period. We measure our performance against Day+1 and Day+31 complaint resolution targets and we have closed the gap to our ED1 targets (80% and 95% respectively) achieving both in 2018–19.

In 2018–19 we resolved 80.1% of complaints in Day+1; an improvement of 8% points compared to prior year. We expect to continue our improvement and consistently achieve our ED1 business plan targets on this measure.

We resolved 96.3% of complaints in Day+31 in 2018–19 which continued our improving trend on this measure.

Our performance improvements in complaint resolution have been driven by investment in our people, processes and supporting systems.

Following a successful trial, we implemented a handyman service in the year to provide remediation services for customers in response to complaints.

We also extended the operating hours of our Customer Care team and up-skilled 160 employees in prioritised areas of the business to support quicker complaint resolution.

Looking ahead, we are mobilising a data project to investigate historic complaints across our six operating regions in order to better identify root causes, enabling us to tackle common issues that can result in complaints.
### 3.4 Provide better information to customers experiencing power cuts through voice or digital communication channels.

**Status**: On Track

- 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 also 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 give 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 supplies 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 provide information for customers about when we aim to have the power back on.

- During 2018–19, we started work on an innovative big data solution for improving our initial estimated restoration times.

- Looking ahead, we’ll continue to upgrade our CRM system and roll out web chat across all of our service lines (including power cuts). We’ll also continue to explore how artificial intelligence and machine learning solutions can help us provide better information for our customers.

### 3.5 Use technology to enable our contact centre to move from being largely reactive to mostly proactive.

**Status**: On Track

- 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 by our Contact Centre following the launch of the ‘105’ single emergency number in September 2016.

- 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.

- 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).

### 3.6 Make it easier for our customers to keep in touch – via internet, mobile, meetings, phone, email, social media, or text.

**Status**: On Track

- 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 and live web chat services. 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 – more than 60% 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.
## ED1 commitments – Social Obligations

### Our ED1 Social Obligations commitments

Our region has 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.

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<thead>
<tr>
<th>Social Obligations</th>
<th>Status</th>
<th>Commentary</th>
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</table>
| 5.1 Route calls from Priority Service Customers directly to contact centre advisors, bypassing automated messaging. | Delivered| — All of the calls we receive from customers on our Priority Services Register 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 2017–18, we introduced a comprehensive suite of tools to support our vulnerable customers with specific communications needs including services such as BrowseAloud 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.  
— In 2018–19 we established a new set of standards for our communication with our most vulnerable customers during planned and unplanned power cuts. We will measure our performance against these standards going forwards and report on them from 2019–20. |
| 5.2 Build partnerships with organisations to help us deliver our social programme. | On Track | — We have continued to expand our projects 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. |
| 5.3 Promote and raise awareness of our Priority Services Register to and with other partner organisations. | On Track | — 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 2018–19, PSR registrations increased by 227,740, an increase of 27% compared to 2017–18.  
— 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.  
— Looking ahead, we’ll be running a targeted campaign in quarter 4 2019 to offer additional communications for PSR customers. We’ll also progress initiatives via our Community Partnering Fund with new and existing partners. |
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<th>Social Obligations</th>
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<tr>
<td>5.4 Enhance our training for front-line staff providing additional support for Priority Service Customers.</td>
<td>Delivered</td>
<td>— 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.</td>
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<td>5.5 In conjunction with local authorities, identify socially-deprived areas and prioritise our support towards them during a power cut.</td>
<td>On Track</td>
<td>— 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.</td>
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<td>— 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.</td>
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<td>— In 2018–19, we enhanced our maps with a new PSR layer that highlights PSR customers affected by live planned and unplanned power cuts.</td>
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<td>— 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.</td>
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<td>— 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.</td>
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<td>5.6 With others, explore the feasibility of community-level aggregated-demand response in return for a community rebate.</td>
<td>Delivered</td>
<td>— 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.</td>
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<td>— The close down report has now been published and learning dissemination events took place during 2018. 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.</td>
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<td>— We will use the learning we have developed during ACE on other innovation projects involving community engagement.</td>
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<td>5.7 Introduce friends and family register and ‘good neighbour’ scheme to support vulnerable customers.</td>
<td>Delivered</td>
<td>— 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.</td>
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<td>— 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.</td>
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<td>— 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.</td>
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<td>— 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.</td>
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<tr>
<td>Social Obligations</td>
<td>Status</td>
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| 5.8 Explore the possibility, with Northern Gas Networks, of upgrading to electrical connections in high-rise tower blocks for safety reasons. | On Track | — We have made significant progress towards establishing the scope and requirements for our ED1 Rising and Lateral Mains programme through extensive survey work of high rise multi-occupancy buildings, which was completed in December 2018.  
— Following the initial surveys we have developed schematic drawings for all high rise properties allowing risk assessment and prioritisation to determine our intervention strategy, in consultation with relevant stakeholders.  
— There will be a step change in activity in the second half of RIIO-ED1, as we move to implementation and delivery of our programme. As part of the initial phase of works, we have conducted a tender exercise and awarded a contract for the first tranche of work to refurbish 33 high-rise blocks in Leeds, with mobilisation expected in August 2019  
— Following the inspection of 440 high rise installations, our programme score for ED1 includes 104 properties that will be refurbished with a forecast expenditure of £7.2m for the ED1 period.  
— We also expect to go beyond our original plan to complete upgrades at 300 low-rise buildings and 132 network assets, including substations, transformers and switchgear. |
| 5.9 Explore solutions to connect rural communities to the network. | On Track | — 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. |
| 5.10 Provide more customer support vehicles along with more services in them. | Delivered | — 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. |
Our ED1 Connections commitments

Our connections customers continue to shape the range of services we offer. We are pleased that we have achieved a 7% improvement in connections customer satisfaction since the start of the period and we are targeting to go even further in the second half of ED1.

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<th>Commitment</th>
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<tr>
<td>6.1 Reduce end-to-end connection timescales for small works by more than 30%</td>
<td>On Track</td>
<td>In ED1 to date we have reduced connections end to end lead times for small works by 25% 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 7% since the start of ED1. Our delivery model is focused on doing the right thing for our customers. Customers are able to meet their works coordinator (single point of contact) to discuss requirements and liaise with them post the quotation should they wish to go ahead with 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. 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. We expect this, and the work we have done on delivery of works following customer acceptance of a quotation, to help us meet our commitment to reduce lead times by 30% by the end of ED1.</td>
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<tr>
<td>6.2 Better payment terms – customers will not need to pay as far in advance</td>
<td>Delivered</td>
<td>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 are continuing to engage with our customers and will keep our payment terms under review during the period to ensure they are fair and reflect customer needs.</td>
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<tr>
<td>6.3 Provide more flexible quotations, including online self-service and faster quotes</td>
<td>On Track</td>
<td>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 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. In 2018–19 we commenced the development of a new quotation management system that allows small works connections customers to receive a quotation from our staff in the field via handheld technology. We expect this new technology to significantly improve Customer Service and increase the speed of quotations.</td>
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</table>
6.3 Provide more flexible quotations, including online self-service and faster quotes (Continued)

**Commentary**
— 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. A number of our customers have expressed an interest in how the Driffield ANM solution could be applied to other areas on our network. 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. These areas have been identified for ANM roll-out, enabling us to continue to connect Distributed Generation in the area without triggering significant connection reinforcement costs.

6.4 Introduce a web-based system to help customers understand the capacity on our network and the likely cost of connection

**Commentary**
— In 2016–17 we introduced interactive generation and demand heat maps on our website. These webpages detail what capacity is available on our network, give a description of any network constraints that would affect connections and set out our guide prices and payment periods for typical jobs. We continue to update our availability heat maps and contracted capacity register each month.

— We continue to support customers in using these tools. As well as providing on-going assistance, we have committed to deliver additional user training to ensure that customers are better informed about how to use the heat maps and network information and give an opportunity to provide feedback to help inform future developments.

— Looking ahead, we’re developing an advanced LV design tool which will allow customers to obtain a budget estimate, for low voltage demand loads up to approximately 200kVA, through a web-based system. This tool will be particularly useful in identifying suitable locations to place electric vehicle charging points where cable routes can be varied.

6.5 Implement a tailored service for large projects, including ‘account management’ where needed or requested

**Commentary**
— In 2016–17 we rolled out a single point of contact model to our connections customers for large projects to guide them through the application and delivery process, allowing customers to liaise with a named member of our team.

— We are currently looking at widening our approach including offering tailored services across key service lines and customer groups. During 2018–19 we engaged with a number of key customers to understand their service level requirements which will be considered as part of our ongoing work in this area.

6.6 Provide a better service for non-contestable elements of work – regularly publishing key indicators

**Commentary**
— 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.

— In 2018–19, 0.2% of our quotations in the year were issued outside of the guaranteed standard timescale – that’s only four of the 2,276 issued.

<table>
<thead>
<tr>
<th>SLC15 Quotations issued¹</th>
<th>Within standard</th>
<th>Outside standard</th>
<th>Total</th>
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<tbody>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
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<tr>
<td>NPg</td>
<td>2,272</td>
<td>99.82%</td>
<td>4</td>
</tr>
<tr>
<td>Northeast</td>
<td>1,019</td>
<td>100%</td>
<td>0</td>
</tr>
<tr>
<td>Yorkshire</td>
<td>1,253</td>
<td>99.68%</td>
<td>4</td>
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¹ For medium and large works connections.
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<tr>
<td><strong>6.6 Provide a better service for non-contestable elements of work – regularly publishing key indicators</strong> (Continued)</td>
<td>Delivered</td>
<td>In 2018–19 we continued 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 created a self-fill template Adoption Agreement to allow ICPs to complete their own Adoption Agreements and issue them directly to NPG for signature. In addition, we facilitated a request to allow ICPs and IDNO to submit legal deeds (associated with the connections process) to us electronically for approval, rather than having to send original copies through the post. Both of these improvements have further streamlined and reduced our input services whilst accelerating the overall SLC15 connection process.</td>
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<td>In November 2018, we undertook a review of our processes in relation to additional load requests received for existing connections from embedded IDNO sites. Historically such requests were classified under Electricity Connection Guaranteed Standards (ECGS) which meant an IDNO may have had to wait extended timeframes to receive a quotation from NPG along with potential contestable works within the quotation (that the IDNO did not require). As a result of this review, we now treat IDNO additional load requests as part of the SLC15 connections process, therefore ensuring that the IDNO receives a quotation for only non-contestable works within an improved timeframe, avoiding potential abortive design works and expense.</td>
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<td>In 2018–19 we continued our existing unmetered overhead street lighting trial with a handful of selected ICPs. The purpose of the trial was to extend the scope of contestable works to allow suitably accredited ICPs to undertake transfers of existing overhead bracket-mounted street lighting columns which have historically been classified as non-contestable works. We have committed via our Incentive on Connections Engagement (ICE) plan to conclude the trial and allow all suitably accredited ICPs to carry out these works by the end of 2019.</td>
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<td>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.</td>
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ED1 commitments – Smart Energy

Our ED1 Smart Energy commitments
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 active and customer-led network.

Smart Energy

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.

Commentary

— 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 will give 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 has been below plan due to technical challenges associated with breaking new ground, our programme is now in widespread roll-out.

— In 2018–19 the programme continued to accelerate, spending £6.8m. This took our total expenditure in ED1 to date to £13.6m on smart grid enablement behind the £46.7m assumed in our ED1 business plan). We remain confident that we will deliver our commitment for the ED1 period.

$\text{Cumulative smart grid expenditure (£m, 2012/13 prices)}$

$\text{Smart grid units installed}$

$\text{RTUs upgraded}$

$\text{Voltage control points upgraded}$

$\text{LV monitoring}$

$\text{Telecoms points upgraded}$
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 (Continued)

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.
— Starting procurement for replacing our secondary communications network with an IP based one.
— Launching our first replicable Active Network Management (ANM) system for customers in Driffield in 2018–19. We have also identified four additional areas on our network that are suitable for ANM – grid supply points at Keadby, Grimsby West, Creyke Beck and Saltend. This will enable us to continue to connect Distributed Generation in these areas without triggering significant connection reinforcement costs.

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)

— 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 LCT uptake. In ED1 to date we have replaced in excess of 11,000 looped services at a cost of over £10m.

— We are committed to exploring alternatives to traditional reinforcement and have continued to explore innovative solutions to maximise the capacity of our existing assets:
— One of our key initiatives is our voltage reduction programme which creates voltage headroom on our network so customers can connect. We've completed almost two-thirds of our primary substation voltage reduction programme in ED1 so far, releasing over 2GW of capacity on local networks and remain on track to complete the programme by the end of ED1.

— We are also 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. A new scheme for HV voltage regulation has now been approved for the York area with investment of £0.8m. A number of potential primary sites have also been identified and studies are ongoing to determine where voltage regulators placed at strategic locations on the network would be preferred over traditional reinforcement.

— 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.
## Smart Energy

### 7.3 Provide opportunities for customers to participate in demand-side response to reduce the cost of running the network

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| On Track | - We are engaging with our customers to develop our flexibility strategy, that aims to make more efficient use of the network for three key use cases; deferral of traditional reinforcement; planned maintenance and emergency support.  
  
  - During 2018–19, we began testing the flexibility market, allowing asset operators to publish information so that flexibility services can be procured should a constraint in that area arise. In the near term, we expect to procure a small range of flexibility products in specific locations on a trial basis, scaling this up across the network in future years as constraints appear.  
  
  - Our Activating Community Engagement (ACE) innovation project has now completed. This demand side response project educated people about their energy usage and actively engaged communities to make small changes to how and when they used electricity in exchange for winning prizes for themselves or local groups.  
  
  - Looking ahead, we will be agreeing contracts with potential flexibility providers and implementing a methodology to identify areas of our network that are best suited for, and where most benefit will be delivered from, the implementation of flexibility services. |

### 7.4 Modify our trading and Customer Service systems to realise benefits from the new smart meter data

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| On Track | - The national smart meter roll-out programme continues to experience delays and in September 2019, the government announced an extension to the deadline by four years to 2024.  
  
  - Despite the ongoing delays, we have taken a number of positive steps internally to prepare to realise benefits for customers. In 2017–18, we received a Green rating from the Department of Business, Energy and Industrial Strategy (BEIS) for our support for the roll-out.  
  
  - 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 integrating it with our telephony platform, online power cut and asset maps and outbound messaging 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.  
  
  - 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. |

### 7.5 Use smart meter data to optimise network investment and reduce losses

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| Behind (Due to external factors) | - 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 and technical issues with the national roll-out.  
  
  - We submitted our initial Data Privacy Plan to Ofgem in the year which outlined our proposals and controls for accessing, aggregating and utilising half hourly electricity consumption data, shaped by our engagement with stakeholders.  
  
  - We have a number of projects ready to commence that will make more advanced use of smart meter data once it becomes available. |

### 7.6 Trial the potential for combining smart grids and smart meter data to provide additional information services

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| On Track | - In 2018–19, we embarked on two innovation projects 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 the LV design and modelling tools with smart meter data being used to inform probability distributions for demand.  
  
  - Our Boston Spa Energy Efficiency Trial will test 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. |
| Smart Energy                                                                 |
|                                                                             |
| **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.** |

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<td>Delivered</td>
<td>— 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.</td>
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<td>— 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 93% for Category B (both against targets of 90%), having resolved almost twice as many defects than forecast.</td>
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<tr>
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<td>— 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.</td>
</tr>
<tr>
<td></td>
<td>— We also implemented a database and reporting suite in the year to streamline the management of our remediation records for customer jobs.</td>
</tr>
</tbody>
</table>
Our ED1 Environmental commitments
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.

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Status</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1 Reduce oil/fluid leakage to ground by 15% by 2023.</td>
<td>Ahead</td>
<td>— Our 2018–19 oil and fluid loss performance reflects a 36% reduction compared to our business plan baseline. Although it wasn't our best year, conditions were challenging due to a long period of dry weather that impacted ground conditions and cable leakage rates.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Forecast</th>
<th>ED1 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016/17</td>
<td>60,000</td>
<td>60,000</td>
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<tr>
<td>2017/18</td>
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<td>60,000</td>
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<tr>
<td>2018/19</td>
<td>60,000</td>
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<tr>
<td>2019/20</td>
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<td>2020/21</td>
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<td>2021/22</td>
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<td>2022/23</td>
<td>60,000</td>
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</tbody>
</table>

— We continue to invest in technologies such as perfluorocarbon (PFT) leak detection. We are also rolling out an innovative self-healing cable additive trial aimed at improving network performance, generating cost efficiencies and reducing the impact of cable leaks.

— We have set a stretch target to achieve a 47% reduction in oil and fluid loss by the end of the period relative to our business plan baseline.

**Stretch target — reduce oil/fluid leakage to ground by 47%**
### 9.2 Reduce our business carbon footprint by 10% by 2023.

**Status:** Ahead

- **Commentary:** Our 2018–19 carbon footprint performance of 35,673 tonnes represents a 40% reduction relative to our business plan baseline.

![Carbon Footprint Chart](chart.png)

- **Ahead:** We are reducing fleet mileage via vehicle telematics, starting to introduce electric vehicles into our fleet, continuing to focus on Sulphur Hexafluoride (SF₆) reduction using thermal imaging technology to detect leaking switchgear and working with our service providers to reduce their fuel consumption.

- **Ahead:** 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.

- **Ahead:** Looking ahead, we're planning to purchase further electric vehicles for our fleet and we will be exploring the feasibility of installing solar panels to our depots and substations to reduce our own consumption.

- **Ahead:** Rolling out new technology and continuing our improvement, we are targeting to reduce our business carbon footprint to 33,500 by 2023, an improvement of over 40% relative to our business plan baseline.

*(New) Stretch target – reduce business carbon footprint by at least 40%*

### 9.3 Underground around 100km of overhead lines in Areas of Outstanding Beauty.

**Status:** Ahead

- **Commentary:** Since the start of the ED1 period, we have removed 55.1km of overhead lines in Areas of Outstanding Natural Beauty (AONB), 6.2km (13%) more than we had targeted by this point in the period.

- **Ahead:** 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.

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

### 9.4 Replace 134km of fluid-filled cables and use Perfluorocarbon tracers (PFTs) to quickly replace leaks.

**Status:** On Track

- **Commentary:** The length of fluid filled cables replaced so far in ED1 is ahead of our original phased profile by 2.7km (3%).

- **On Track:** 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 oil/fluid loss targets for the period and further reducing our environmental impact.

- **On Track:** 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.

*(New) Stretch target – deliver 224.4km of fluid filled cable replacement by the end of ED1*
<table>
<thead>
<tr>
<th>ED1 commitments – Environmental</th>
<th>Status</th>
<th>Commentary</th>
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</thead>
<tbody>
<tr>
<td>9.5 Maintain SF₆ losses as the volume of gas in our switchgear assets increases.</td>
<td>Ahead</td>
<td>— Our 2018–19 SF₆ loss result (65kg) was a best ever performance, representing a 34% reduction in ED1 compared to our business plan baseline.</td>
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<td>9.6 Deliver faster and higher quality street works reinstatement when we dig up the street.</td>
<td>On Track</td>
<td>— Through continued deployment of our SF₆ thermal imaging camera we have been able to accurately pinpoint leaks and target equipment for repair or replacement. Leveraging the new technology, we have set a more aggressive approach to containing SF₆.</td>
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<td>9.7 Make sure reduction of electrical losses is explicitly factored into investment decisions for a wider range of assets.</td>
<td>Delivered</td>
<td>— Following engagement with our stakeholders, that continues to highlight this as a key priority, we have set a new stretch target to reduce losses to 50kg per year by the end of ED1 (reduced from our previous stretch target of 100kg).</td>
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<td>9.8 Continue to operate a full revenue protection service.</td>
<td>Withdrawn</td>
<td>— (New) Stretch target – reduce SF₆ losses to at least 50kg by the end of ED1</td>
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<td>— We achieved a 93% success rate in 2018–19 for our annual streetworks reinstatement quality. It was the fourth year in a row that we have exceeded our 90% target.</td>
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<td>— We currently chair the regional utility performance group which is seeking a national improvement in performance.</td>
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<td>— 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.</td>
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<td>— We have changed our policies around how we design and build network assets to explicitly factor losses into our investment decisions.</td>
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<td>— During 2018–19, we continued to increase our understanding of electrical losses across our network and how it is impacted by the connection of low carbon technology. We’ve also trained more staff to understand the principles and we have shared our methodology with other DNOs.</td>
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<td>— More detail on how we manage losses can be found in our environment and innovation report.</td>
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<td>— 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.</td>
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<td>— 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.</td>
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</tbody>
</table>
Our ED1 Financial commitments

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.

10.1 We will deliver an immediate 10% price reduction at the start of the period.

— 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 a number of other factors. These factors include performance against Ofgem’s incentive mechanisms, changes in charging methodologies for the industry, allowed cost of capital and lengthening of the period over which we recover our investment (from 20 to 45 years).

— The impact of the 14% price reduction and the other factors mentioned above is set out in the graph below showing our allowed revenue.

10.2 We expect to create 1,000 job opportunities in the organisation during the ED1 period.

— We have created 571 job opportunities in our region since the start of ED1, including 323 new recruits via our workforce renewal programme – this is ahead of our target of 500 by the half way stage.

— We broadened our trainee programmes on offer to include opportunities in other departments such as Finance, IT and Procurement.

— In 2017–18, we recruited our first Cyber Apprentices as part of a new Government pilot scheme (which Northern Powergrid is part of) that aims to build the skills we need to protect the nation’s critical national infrastructure from cyber threats and attacks.

— In 2018–19 we created 146 job opportunities (putting us 14% ahead of our target) and we continue to expand our offering with the recruitment of nine graduates into new trainee engineer roles within system design and network control.

— We remain confident we will meet our expectation to create 1,000 job opportunities by the end of the period.
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:

By email
yourpowergrid@northernpowergrid

On twitter
@northpowergrid
(for power cut information and advice)
@powergridnews
(for information about the company and the work we do in communities)

Online at:
www.northernpowergrid.com

Connections enquiries

By telephone
0800 011 3433

By email
getconnected@northernpowergrid.com

General enquiries

By telephone
0800 011 3332

By email
cus.serv@northernpowergrid.com