

Part 2

**Delivering meaningful outcomes
for our stakeholders and customers**

2017/18



Part 2 – Delivering meaningful outcomes for our stakeholders and customers

1 Introduction

2017/18 headlines
2018/19 priorities

2–5 Keeping and exceeding our promises

- 2–3 A safe and reliable service – stakeholders’ top priority
 - Delivering greater resilience for our customers
 - Collaborative solutions that support regional economic growth
 - Raising safety awareness to reduce incidents
 - 4 Engagement delivers environmental improvements
 - 4–5 Delivering an excellent customer experience
 - Faster, flexible and more accessible channels
 - Smarter working delivering customer service improvements
 - Smart meters – improving the customer experience
-

6–7 Looking after our communities

- 6 Responding to local and community energy needs
 - Supporting local and community energy partners
 - Community energy seed fund builds local capacity
 - 7 Engaging young people on key issues through education
 - Affordability and energy efficiency – educating children and their families to keep energy costs under control
 - Leadership – playing our part in strengthening local communities
 - Safety – working with young people to help them understand the dangers of electricity
 - STEM and employability – inspiring future engineers
-

8–10 Unlocking our energy future

Holistic engagement informing the transition to DSO

- Strategy informed by stakeholder feedback
- Scoping the future – pioneering research and learning
- Getting on with it – learning by doing
- Building new capability – future proofing our network



Our long-term success is dependent on delivering excellent services at fair prices to both our current customers and stakeholders and those of the future. This section of our submission is packed with real examples of how partnerships and real dialogue have produced outstanding solutions for our customers and stakeholders.

We constantly challenge our teams to make sure that every engagement is, and can be

shown to be, effective. We measure this against our stakeholders' standards as well as our own, defining the outcomes, improvements and benefits that they want to see delivered in a cost-effective way. From keeping our promises to keep the lights on and deliver more for less, to informing our long-term plans, I am proud that we have delivered 170 significant outcomes for our customers and stakeholders this year.

In this document, we only have space to illustrate the work being undertaken rather than provide a full report of all that is being done. Nonetheless, examples have been drawn from across the different areas of day-to-day delivery as well as the innovative work that will unlock our energy future.

Within this, our contribution to improving educational outcomes in our region is a professional and personal priority of mine

because education is a key contributor to a strong economy. I am proud of the expansion of our education programme beyond safety to include STEM, employability, energy efficiency and much more. A business like Northern Powergrid has the intellectual resources and the delivery capability to make a positive impact in our region. This year I have personally led on our involvement with Academy Ambassadors, which spearheads our emphasis on engaging our senior leaders around this key societal issue.

Phil Jones
President and CEO

2017/18 highlights

85%

of stakeholders feel better informed about the issues influencing DSO transition

86.4%

Customer satisfaction in 2017/18 – our highest score to date

£500m

potential savings for customers by 2031 through investment in smart enabling technology

£2m

additional investment in undergrounding cables

45,175

children reached through education programmes

2018/19 priorities

Comprehensive community engagement enabling our tower block improvement programme

Inclusive engagement supporting the launch of our customer-led DSO Development Plan

Stakeholders actively involved in early co-creation of our priorities in readiness for RIIO 2

NEW

To support our customers' interests, we have played a core role in 'The Northern Energy Taskforce' since it was created in Summer 2016. The Strategy includes proposals to create a regional energy economy by 2050, worth £15 billion a year, that provides affordable, clean energy and supports 100,000 green jobs.

The future transition to smart, cost-effective, low-carbon energy offers huge opportunities for the country's economy and to improve people's lives. We believe the North is well-placed to be at forefront of this change.

The taskforce, chaired by Sir John Harman, includes representatives with expertise across infrastructure, engineering, finance, academia and local government including our CEO, Phil Jones. The group has developed a number of reports informing regional and national thinking culminating in the

publication of *A Northern Energy Strategy* report in October 2017. This sets out the significant opportunity that the changing energy sector presents for the North of England to drive economic growth, take advantage of opportunities post-Brexit and enhance the wellbeing of its residents.

This collaboration with a group of Northern stakeholders provided:

- ▶ **Energy system thinking** – ensuring that our actions are delivering on wider stakeholder needs and are coordinated for maximum impact.
- ▶ **Evidence to fill a gap** – this was the first independent detailed research to inform a blueprint for energy matters as part of the regional devolution agenda in the North.
- ▶ **A platform for other initiatives** – our 'unlocking energy futures' programme and whole energy system collaborations with Northern Gas Networks and Nissan were informed by this stakeholder-led policy landscape project.

Northern Energy Strategy engagement

Six

stakeholder workshops across the North of England.

50+

separate meetings with industry stakeholders.

A series of seminars with government officials, Local Enterprise Partnerships and combined authorities.

100+

stakeholders at the launch.

100+ industry stakeholders

attended the launch in October 2017. They welcomed its recommendations and an action plan is progressing including a Parliamentary reception with all Northern MPs with an interest in energy to discuss next steps and implications for policy.

Keeping our promise to deliver more for less underpins everything we do across our business. From our annual engagement and research we know that our stakeholders' priorities remain consistent with a safe and reliable service, managing our environmental impact and consistently delivering great service for our customers.

A safe and reliable service – our stakeholders' top priority

Feedback and insight

- ▶ Delivering a safe and reliable service remains at the top of the list of our stakeholders' priorities, consistently ranking in the top four since 2013. Our stakeholders believe we should prioritise investment that improves emergency resilience, to maintain a reliable and sustainable network.

Priorities research 2017

Through engagement with rural and agricultural stakeholders we found that:

- ▶ 88% of the farmers we surveyed had not heard of the '105' number.
- ▶ 72% still did not know the legal minimum height of power lines crossing farms/farm land.

Agricultural shows 2017

What we did

- ▶ Ensuring our communities and network are resilient is something we are always striving to improve. This year we have accelerated our flood defence work, improved stakeholder access to critical resilience information and supported regional infrastructure initiatives.
- ▶ We have reviewed our safety programmes to gain greater insight into where we should be concentrating our efforts, strengthening our safety programme, broadening its impact, sharpening the safety messages and using a greater blend of channels – face to face, letter, email and social media.

The results

46
sites upgraded to be resilient to flooding

80%
year-on-year reduction in number of incidents of HGVs striking overhead lines

Over 100
stakeholders have direct access to critical real-time incident information

Cheaper,
quicker, more efficient infrastructure connections

55%
reduction in contacts by farm vehicles and lorries with overhead lines over the last 3 years

NEW

Effective engagement underpinning a more resilient network for the future

Through listening to our stakeholders, we understand the important role a safe, reliable power network has in supporting communities and encouraging economic growth. Through close engagement throughout project consultation and delivery we are often

able to find cheaper, quicker and innovative solutions whilst keeping stakeholders up to date with key developments. This includes major infrastructure projects such as the work we are doing to support HS2 and their partners in the delivery of their 2019

HS2 Hybrid Bill, through to the smaller but just as important infrastructure projects that support our local communities and their needs. Some examples are shown below.

Early Engagement – Leeds Enterprise Zone

We have been engaging closely with Leeds City Council and the Leeds City Area Local Enterprise Partnership (LEP) since 2014 around their future development plans. This year has seen this engagement really benefit proposed schemes in East Leeds. Through education and understanding of each other's plans and capabilities, we have been able to design the required works to deliver them at almost half of the cost and time of the proposals that were initially envisaged.

Partnership working to overcome challenges – Gateshead swing bridge

We have been working closely with the Port of Tyne and English Heritage on a plan to keep this historically significant site safe and operational. The power solution has been a challenge as we had to contend with a 150ft cable drop and strong river currents preventing underground solutions. Through our discussions with their teams we have developed the option of a battery storage device to be charged from a micro water turbine generator submerged in the river. The Port of Tyne are really enthused at the possibility of utilising cutting-edge green technology to power this ancient bridge.

Innovating – Energising the Rotherham Tram

We are supporting the first scheme in the country for trams to use the rail line in Rotherham. The scheme, which has learning for other cities, has been closely monitored by a Parliamentary Select Committee and Chris Grayling, the Secretary of State for Transport. Each day, our work has been reviewed with photos taken and uploaded to a WhatsApp group for the MPs to keep up to date with progress and monitor our approach.

Nexus – North East Metro – Original thinking to keep passengers moving

To ensure a reliable service for over 40 million passengers a year, the switchgear at ten of the Newcastle Metro stations need replacing over the next year. Through extensive engagement with Nexus we have been able to find a solution using new technology which is cheaper and easier to both install and use than previous solutions. We will be trialling this in 2018 with a plan to roll out our works in coordination with Nexus replacing some of their own ageing equipment, to minimise disruption to passengers using this key service for business, daily commutes and leisure.

Outcomes and benefits

▶ **National best practice for MP engagement**
as tram projects are initiated across the country.

▶ **Cheaper, quicker, more efficient infrastructure connections**
– by up to **50%** in East Leeds.

▶ **Keeping 40 million passengers moving in the North East**
– keeping customer costs down and minimising disruption.

▶ **Over 9,500 new jobs**
by 2025 could be delivered through Leeds Enterprise Zone – enabling economic development.

Delivering greater resilience for our customers

Our investment programme serves to increase resilience not just for our network, but for the communities and businesses we serve.

We invest to protect our assets whilst engaging with communities and individuals to improve their own resilience and preparedness for future weather events.

Approach

SCALED UP

Delivering critical flood defences

In 2017/18 we delivered flood defences at 46 sites, beating our annual target of 42. Our programme is accelerating and we are expecting to exceed our business plan target of defending 141 sites in the current regulatory period.

Many areas have experienced economic hardship through the impact of flooding and its aftermath. We are ensuring that

we sensitively manage our impact on tourism and commerce in those areas that are still in recovery.

Since Storm Eva we have been active members of the Calderdale Flood Group, helping us to understand when best to conduct our flood defence investment work whilst minimising the impact on local communities. Part of this community involvement included supporting natural flood defence volunteering.

Engaged and informed stakeholders

Access to up-to-date, relevant information to support a major incident is critical for our work with our resilience partners and stakeholders. Following stakeholder feedback, our improved stakeholder information portal currently has over 100 users including Local Authorities, NHS, Citizens Advice, Fire Services, Telecoms, Police authorities, Housing Authorities and Highways Agencies.

Incident response is improved as partners can use information to support local response and prioritisation, e.g. emergency services, health and more.

The portal allows users to:

- Identify all multiple premises unplanned and planned faults in one place, enabling filtering by duration and type of fault.
- Identify customers by Local Authority and Police boundary.
- Identify all postcodes affected by a fault by either seeing them as a pin on the map or in a list and as part of our investment plans.
- Identify health & social care locations (developed with NHS England) including GPs, hospitals, nursing homes, residential homes and community health.

Outcomes and benefits

- **Fewer customer power cut interruptions** and greater resilience as fewer assets are susceptible to flooding.
- **Least disruption to trade and tourism** through working in partnership with key agencies and consulting with the community as to when work should take place.
- **580 trees planted** as part of natural flood defences.

"The Northern Powergrid Mapping of power cuts system is used by Gateshead Council to provide quick and easily accessible information with regard to residents most vulnerable to a loss of electrical power. This is a tool that supports the excellent working arrangements between the Council and Northern Powergrid, who are working to strengthen the system further from joint learning experiences."

David Patterson, Gateshead Council, Resilience & Emergency Planning Manager

Raising safety awareness to reduce incidents

This year we have evolved and further tailored our safety education engagement, messaging and campaigns. We've also joined with other DNOs and the Energy Networks Association to share our own safety

campaign learning, and to deliver consistent and impactful campaigns to some of the hard to reach groups who are most vulnerable to safety incidents such as farmers, and more recently hauliers.

SCALED UP

CASE STUDY

Look up Stay Safe



Building on our 2016/17 "Look up Stay Safe" campaign the joint DNO campaign "Look Out, Look Up!" was launched in January. The campaign, delivered through social media, press and regional road haulier safety events, encouraged people including farmers, hauliers and the general public to plan ahead to avoid contact with overhead

power lines and to know what to do if contact is made with a line.

- **80% of hauliers have been reached through the campaign.**
- **150 safety advice leaflet downloads.**
- **428 safety cab stickers and safety messaged air fresheners ordered for use on farms.**

Approach

As part of Farm Safety Week and throughout the year we promoted safety messages in Yorkshire Post Country Week, Farmers Guardian, NFU newsletter and a Twitter campaign.

NEW

Following stakeholder feedback, safety messages now on the back of all our Wayleaves letters

NEW

Safety induction on the syllabus now at agricultural colleges

Reached rural hard-to-reach communities through targeted attendance at five agricultural shows

Reach

25,000+
readership

c.18,000
stakeholders annually

200
young farmers reached

260,500
footfall

Outcomes and benefits

- **55% reduction in contacts by farm vehicles and lorries with overhead lines over the last three years.**
- **80% year-on-year reduction in number of incidents of HGVs striking overhead lines.**
- **Hard-to-reach rural communities** reached through trusted partners, informed on safety and engaged to inform future communications priorities.
- **Award for impact** – Yorkshire Show Trade Stand.
- **Educating Young Farmers** – to be our safety champions.

Engagement and innovation delivering sustainable environmental improvements

Feedback and insight

Our stakeholders tell us that they want us to avoid disruption to local environments and minimise our environmental impact including:

- ▶ Better reinstatement of land.
- ▶ Promotion of 'green' energy sources.
- ▶ Undergrounding of overhead lines in areas of outstanding natural beauty.

Stakeholder priorities research and day-to-day stakeholder engagement

What we did

▶ We recognise the wider role and the impact our activity can have in the communities where our customers live and work because we live and work there too. We are always looking for new ways to reduce our impact on our communities and the environment. This year has seen us trialling new technologies and working closely with stakeholders to make this happen, including new and ambitious targets for fluid loss and scaling up our undergrounding programme.

The results

£2 million further investment in 20km undergrounding

14 weeks less on site, in communities where we are installing a new primary substation

£2.6 billion

tourism economy supported within Areas of Outstanding Natural Beauty and National Parks

We take the environmental impact our activities can have on our communities very seriously. Working with our partners and

stakeholders, we are continually looking for further ways we can reduce our carbon footprint, improve our environmental

practices and minimise the impact we have. This year has seen further examples of how we are innovating in this area:

Approach

Supporting our region's landscape

Our Areas of Outstanding Natural Beauty and National Parks stakeholder group has reinforced the importance of undergrounding work to the communities who live there and for tourism. It's our priority too; we are expecting to complete our commitment to underground 100km in National Parks and Areas of Outstanding Natural Beauty (AONB) two years earlier than planned (2020/21 rather than 2022/23).

We have committed to an additional 20km of undergrounding in the ED1 period, equating to a further £2m investment. Our stakeholders have asked if this funding can be used for undergrounding new connections as well as undergrounding of existing overhead lines; we are currently discussing this opportunity with Ofgem on behalf of our stakeholders.

Outcomes and benefits

- ▶ **Improved visual amenity** supporting regional tourism and economic development (tourism worth £2.6 billion per year).
- ▶ **National policy discussions** on behalf of our stakeholders with Ofgem.
- ▶ **Additional £2m investment** for 20km further undergrounding.

Exploiting the use of naturally occurring, environmentally friendly resins to reduce fluid loss from our 1,000km of Extra High Voltage fluid-filled cables

Our stakeholder panel fully supports our intention to reduce fluid loss by 60% by 2023, an increase from our original business plan target of 15%. Through our investment in new technologies such as perfluorocarbon (PFT) leak detection and the benefits from our innovative, self-healing cable additive trial to reduce fluid loss, we will further improve our environmental performance. This will improve network performance, create cost efficiencies and reduce the impacts of cable fluid loss – in turn, improving our environmental impact. We believe this trial will be a key area for us to share best practice with other DNOs.

- ▶ **60% reduction in fluid loss** targeted by 2023.
- ▶ **Speeding up leak detection** to further reduce our environmental impact.
- ▶ **Helping all DNOs to reduce environmental impact** – sharing learning from self-healing cable trial.

Reduce the impact of our work on the communities we serve

This year we trialled a new way of replacing our primary switch rooms. Previously our teams would be on site building switch rooms from scratch for around 16 weeks however, we trialled building the rooms in a factory and then transporting the ready-made kit to site. This reduces the time taken to around 2 weeks, meaning less impact on our customers and safer as work is conducted in a controlled environment. We're now rolling this approach out more widely (7 substations a year).

- ▶ **14 weeks less on site** – minimising disruption to customers.
- ▶ **Minimising safety risk**
- ▶ **Est £700,000 savings** to enable further investment in network reliability.

Delivering an excellent customer experience

Feedback and insight

We use customer research, stakeholder feedback on their service priorities, customer listening groups and the voice of the customer to make sure we continually monitor what is important to our customers. This year, they told us:

- ▶ Make it as easy as possible for us to get in touch with you.
- ▶ Provide access to a wide range of contact channels – including web chat capability.

Stakeholder priorities research and customer feedback

What we did

▶ We've been working on turning our contact centre from being primarily inbound to primarily outbound. We've invested heavily in digital technology offering new and improved channels of communication, implementing a model that puts customers in control in terms of how they want to communicate with us. We have successfully collaborated with industry stakeholders to smooth the smart meter roll-out and minimise costs.

The results

5,200 customer searches on our FAQs and self-learning knowledge base

97% customer satisfaction with new live web chat

Enabling new streamlined service for smart meter appointments

42 new colleagues improving services for all customers

NEW

Faster, flexible and more accessible channels

We have improved our communication channels and the accessibility and speed of the service we offer. We have used customer feedback to improve our Interactive Voice Response (IVR) to deliver a speedier process. Aligning our tone of voice across all our digital platforms has overcome the challenge

of ensuring that if our customers experience a power cut, they get the same great service, no matter which channel they choose to use.

In response to customer feedback, our new CRM system developments have enabled us to launch our proactive web chat channel and we also

switched on our dynamic information library supporting customer self-service help and guidance. 112 customers have used web-chat since its launch in November and we had nearly 5,200 searches on our knowledge base that have enabled our customers to self-serve when it suits them.

Outcomes and benefits

- **5,200 customers self-serving** through new searches on our FAQs and self-learning knowledge base.
- **97% customer satisfaction** with new live web chat.
- **86.7% satisfaction** with digital channels, an increase of 1.6%.
- **An improvement of 3.3%** in customer satisfaction with our digital IVR service following these changes.

NEW

Smarter working delivering customer service improvements

This year, our stakeholder panel highlighted the importance of effectively preparing for the smart meter roll-out and thinking through the support our customers will need. We know that many of our customers now and in the future will prefer to speak to us directly, so we have reviewed our Contact Centre resourcing for the better, to meet customer demand, as the smart meter roll-out gathers pace.

- We increased our team by 42 colleagues (full-time equivalent) to provide better service levels to our customers.

- We have also invested circa 6,000 hours in 12 months in coaching for excellent performance in our team, including our new Quality Framework – developed in response to voice of the customer feedback around the consistency of service delivery and the provision of accurate and timely information. The Framework focuses on providing polite, friendly and helpful service. Colleagues have a minimum of four coaching activities each month, supporting them to deliver great service, and they are clearly recognised for their performance through our reward and recognition scheme.

Our stakeholders and customers told us that when they experience a power cut, having a full picture was very important to them to plan effectively. Responding to this, our CRM enhancements this year have created a single portal that brings together all power cut information for our advisors, enabling them to relay this comprehensive picture to our customers swiftly.

Our customers now benefit from their own self-service online portal which learns dynamically from what other customers view. It enables customers to provide us with immediate feedback, helping us improve the quality of online answers for the benefit of all our customers.

Outcomes and benefits

- **19% reduction in complaint volumes** and improved speed of resolution.
- **86.4% overall customer satisfaction.**
- **50% improvement** in the speed of answering calls.
- **Future-proofing** our contact centre to meet our customers' needs now and in the future.

NEW

Smart meters – improving the customer experience

We have successfully collaborated with industry stakeholders to smooth the smart meter roll-out and minimise costs. Our direct engagement with the top 10 energy suppliers in our region as well as some of the smaller suppliers has improved best practice sharing and communications. Through the year, monthly meetings with suppliers helped us to see how our defect rectification work can best be coordinated with their meter installation programmes. This led to the launch of our customer appointment booking system

(CABS) and changes to the industry categorisation of defects. Customers benefit from both of these through lower hassle and reduced costs from fewer appointments to fix their issues.

Our booking system enables a smart meter installation agent to access our online system to agree a time and date with us and our customers to fix any faults on our equipment that may be preventing a smart meter from being fitted. Our proactive leadership engagement in the Meter Operator industry working group has helped to avoid abortive visits through better definition of defects and communication across parties.

To realise the benefits from smart meters for our customers, we have built and commissioned new IT systems and supporting processes. As there are 1.1m SMETS1 meters in our region and this will continue to increase, we have been exploring with industry stakeholders the potential to gain access to data from these meters so that we may deliver more efficient networks and improved operational response.

Our plans mean that we expect to gain access to data for around 10% of these meters for trials that could open the door to customer benefits including enhanced operational performance and network planning without the disruption or cost of changing meters prematurely.

Outcomes and benefits

- **Enabling smart meter roll-out** and improved customer experience.
- **BEIS has become a strong advocate** of our customer appointment booking system.
- **Reduced the number of customer site visits** and associated costs through clarified defect reporting.

We know we have a wider role to play in supporting the communities we live and work in. Our stakeholders agree and have told us that education and local energy are two areas where they think we should focus our efforts.

Responding to local and community energy needs

Feedback and insight

Local energy remains an active issue in the industry in relation to longer term DSO transition plans. Reductions in government funding are impacting the ability of local community groups to successfully develop and deliver projects.

Community Energy England, State of the Sector report 2017

What we did

We have been engaging community and local energy stakeholders since 2014 by focusing on supporting people with practical advice to access support. Whilst the local energy sector is going through a challenging time due to changes in funding we continue to support them through engagement, education, communication, funding and offering accessible services.

The results

2,722 people supported through 18 community energy projects since 2015

Giving a voice
Giving local energy stakeholders a voice at a national policy level

Supporting local and community energy partners

The *Rough Guide to Engaging Communities in Energy Network Innovation* report published in early 2017 was compiled following two joint

national DNO events. The report offered a number of recommendations for DNOs. This reinforced our approach to local energy

engagement and support and helped inform our 2017/18 activity (see below).

Recommendations

- ✓ Run national innovation events every year.
- ✓ Commission a thought leadership piece.
- ✓ Involve the private sector.
- ✓ Local engagement and continue working with local trusted intermediaries.
- ✓ Share good practice through multiple channels and share information in places communities already look for it.
- ✓ Update heat and constraint maps.
- ✓ Help people understand innovation through education.

Our response

- ✓ Sponsored the *State of the Sector* Community Energy England report and Community Energy England awards.
- ✓ Part of the North East Community Energy Group, looking at new business and funding models. Joined the new Yorkshire Community Energy Group which is assessing its role in a zero carbon Yorkshire.
- ✓ Held a successful June 2017 event to explore the 'Local Supply of Electricity'. Bringing together local community energy groups, Local Authorities, academics and industry experts to discuss the challenges and opportunities.
- ✓ Regular connections workshops, webcasts, webinars, Twitter Q&As and a connecting innovative technologies workshop to support this.
- ✓ Meetings with 10 Local Authorities to discuss plans for development of city centre combined heat and power projects.
- ✓ Wrote on behalf of our stakeholder network, in response to the call for engagement on Ofgem's Research Hub – asking for local energy to be moved up the agenda.
- ✓ Supported Community Energy England to refresh and enhance the Community Energy Hub – the one stop shop for community energy best practice sharing and resources.
- ✓ Supported five projects through the third year of our Community Energy Seed Fund, reaching 565 beneficiaries with projects and published their case studies to share practice and learning (see below).

Outcomes and benefits

► Increased

understanding of local energy challenges helping to inform our engagement and services.

► 7.2% increase

in visits to the Community Energy hub from our region; improving our access to community energy stakeholders to raise awareness of the support available.

► Support

for emerging community energy schemes, identifying potential future network demand early and supporting the delivery of some of our social priorities.

Community Energy Seed Fund builds local capacity

The third successive year of our Community Energy Seed Fund saw us support five projects across our region. Full case studies have been published:

- **Energy matters** – tackling fuel poverty and educating local residents in Bradford about energy usage.
- **The Centre for Sustainable Living** set up an exhibition for sustainable energy and living at Meanwood Valley Urban Farm.
- **My Energy – My Life** – providing training and one-to-one energy-

related support to people with learning disabilities in Rotherham.

- **Chapeltown co-housing community energy** – providing energy advice to the co-housing development project in Leeds in relation to house designs and onsite energy generation.
- **Re-energising Middlesbrough** – supporting the sustainability of six community buildings by helping reduce energy use and advising on the use of renewable generation.

Outcomes and benefits

► 18 projects

community energy projects supported since 2015.

► 565 people

reached with efficiency advice, switching and in-home measures. 2,777 since 2015.

► Sharing

best practice between communities by generating and publishing case studies from the entries to the fund resulted in 2,107 downloads from our website and additional publicity for entrants and their innovative ideas.

Engaging young people on key issues through education

Fostering ambition and supporting a more aspirational generation for our industry and the communities we serve is a key priority for

our business. Our research clearly shows that education opportunities and standards are lower in our regions than the national average

and we believe we have a role to play in working in our communities to tackle this.

Feedback and insight

- ▶ Within our regions, 24.5% of customers aged 16 year or older have no qualifications.
- ▶ 39.9% of the households we serve have no adults in employment and 17.9% have no working age adult in employment, education or training.
- ▶ Across energy and utilities, 36% of all vacancies are due to skills shortages.

What we did

We have developed our comprehensive education programme in collaboration with stakeholders and partners. This year we have expanded our initiatives whilst making the most of every opportunity to raise awareness of our PSR services, encourage referrals, change behaviours and inspire young people.

The results

45,174
people reached
through our
education
programmes

£296,750
financial benefits
for customers

70
volunteers
actively engaged
in education
programmes

6,300
people reached
through Energy
Extra community
outreach

Affordability and energy efficiency – educating children and their families to keep energy costs under control

EMBEDDED

Energy Heroes

20 schools and **900** children reached
This is the third year of our four-year Energy Heroes programme, targeting 100 schools in the most deprived areas in our region. We support year 5 students to look at energy efficiency measures, fuel poverty alleviation and the challenges of climate change and share learning with their parents, whilst improving their mathematics skills. It includes teacher training sessions, resource packs, an energy audit, up to six weeks in-school programme and a Community Energy Extra Event that enables students to share their learning with their families and friends.

Outcomes and benefits

- ▶ **£296,750**
Total financial benefits to customers from the affordability and energy efficiency programme scheme.
- ▶ **£14.13 per £1 spent**
Cost benefits of scheme.
- ▶ **6,300 people reached**
through Energy Extra proactive community outreach creating Energy Champions and Champion schools.

EMBEDDED

Ahead Partnership – Make the Grade in Energy

21 schools and **1,198** children reached
Running since 2013, this initiative with schools in deprived areas helps to address the skills shortage within the energy sector from primary school to graduate level. It also focuses on addressing the industry gender gap and enables volunteering opportunities.

NEW

Improving education resources

5,173 resources downloaded
Our new education website has been developed with our school partners. It has been piloted with seven schools and adapted to incorporate feedback from both pupils and teachers. Lesson plans, worksheets and many more resources are now available to schools.

Leadership – playing our part in strengthening local communities

NEW

Inspire governors and Academy Ambassadors

This year we are a partner on two Department of Education supported national programmes connecting skilled volunteers to partners to become governors and trustees in local schools. The programmes match volunteers and supports them through training and resources, helping them be effective members of governing boards.

"I am a big believer in the positive impact that business is capable of having on the education landscape. But I also am sure that the benefit flows back very quickly – in terms of development opportunities for our own people and the sense of engagement that it creates."

Phil Jones CEO speaking at National Academy Ambassadors development day

Outcomes and benefits

- ▶ **97%**
of students better understand the careers available in the STEM sector.
- ▶ **87%**
of students had increased awareness of their aspirations and skills.

Safety – working with young people to help them understand the dangers of electricity

SCALED UP

School safety programme – 259 schools

and **32,723** children reached
We expanded our school safety team with the training of six new part-time facilitators to increase our reach and maximise efficiency. The team delivers safety talks through school assemblies, Prison – 'Me No Way' and Crucial Crew programmes covering safety around electricity lines, our sites, street works and flood resilience as well as the dangers of metal theft.

NEW

Scouts safety badge – 6,301 children

received badges and **175,000** potential reach through social media
Our new national partnership with the National Scout Association has introduced the 'Home Safety Badge' for UK Cub Scouts aged eight to 10 and a half. The badge teaches children about safety around the home and encourages them to spread the lifesaving messages they have learnt, also thinking about the PSR and people who may need extra support during a power cut.

Outcomes and benefits

- ▶ **32,723**
children educated around electrical safety and the dangers of metal theft.
- ▶ **0**
instances of safety incidents involving children.
- ▶ **Safety**
Potential to roll out nationally with DNOs and GDNs following successful pilots of Cubs and Scouts safety badge.

We collaborate by seeking ideas from all corners of industry and our diverse customers to help set our direction for the transition to a Distribution System Operator (DSO) – so making our approach one that is truly customer-led.

Feedback and insight

After keeping the lights on in an affordable and efficient way, innovation and the future are the next biggest priorities for our stakeholders.

Stakeholder Priorities research

‘Our vision for the North of England is that by 2050 we will be the leading low-carbon energy region in the UK.’

IPPR North, Northern Energy Taskforce

What we did

This year we have launched our DSO programme “Unlocking our energy future”, informed by engagement with stakeholders since the beginning of this price control period, around the future of our network. It sets out our approach to the transition to DSO along with how we’ll work with our stakeholders and customers to make this happen.

The results

90%

of stakeholders want us to prioritise ‘customer flexibility’

85%

of stakeholders feel better informed about the issues influencing DSO

£83m

investment in ED1 in smart enabling technology, building the foundations for future services

Holistic engagement informing the transition to DSO

2013 > 2017

Engaging stakeholders in understanding existing and future needs to inform changes to plans and initial DSO approach

Our initial DSO proposals are well informed by customer needs, giving us a strong starting position for coherent DSO engagement

2017 > onwards

Stakeholders to be engaged in developing DSO approach and offer, through early input and collaborating to develop solutions and a flexible approach

Our DSO transition plans are customer led in terms of direction, approach and timing and are flexible enough to adapt to the changing needs of our customers

Our aim is to create a sustainable and active dialogue with our diverse stakeholders and customers to enable them to effectively guide our decisions around this complex agenda, for us to understand their priorities and help us create a truly customer-led DSO approach.

We held three events, tailored for different audiences to ensure attendance from all corners of industry and other interested stakeholders. To increase reach we also used webcasting and webinar techniques.

Our launch events were held on the same day in London and later that day in Leeds. This enabled a much greater diversity of engagement. 82 colleagues from academia, DSO and industry, government, media and regulatory organisations attended our London launch which was targeted at national stakeholders. The Leeds event, with over 90 attendees, was hosted by the Institute of Electrical Engineers Association to encourage engagement from not only engineers, but importantly also students, graduates and energy specialists. Lastly, we held a regional launch

in York with around 60 regional stakeholders attending including new breakout sessions to allow more time for discussion.

Expert advice and challenge

To guide our transition, our DSO Expert Advisory Group is now in place to provide expert advice, insight, skills and challenge to ensure our transition is robust, well thought through and meets the needs of all of our customers. Their role is strategic and includes:

1 Critical friend

We start with a hypothesis that DNOs will be a big part of the transition to DSO. Does the evidence produced support this hypothesis?

2 Quality

Are we asking the right questions? Is the evidence sufficiently strong to aid the changes required for DNOs and to inform policy?

3 Clarity

Is the presentation clear? Are we providing clear messages on what are often complex matters?

This advisory group provides opportunities to both inform and disseminate information on the work we are also progressing in our Customer-led Distribution System (CLDS) innovation projects.

As a priority, we are exploring how our role will need to change in order best to serve our customers as they participate in new markets for network and energy services that support the energy industry.

Outcomes and benefits

The expert advisory group challenged us to bring forward early programme deliverables and to quantify the benefits to customers of local energy markets. We have now triggered a quantification of the value from these markets in our Customer-led Distribution System project that will be included within our DSO development plan to be published later in the summer of 2018.

Extending the reach of our engagement

NEW

In order to disseminate our DSO thinking and the work we are doing in our Smart Grid Enablers Programme as widely as possible, we have aligned our events with a series of press releases and media relations activities with coverage in industry publications but importantly

broadsheets and local radio, raising awareness and understanding to increase interest, inclusion and to encourage future engagement.

► From November 2017 to January 2018, we achieved **59** pieces of quality coverage across national, trade, broadcast and regional media.

► The campaign resulted in more than **2,000** social shares of coverage and more than a **quarter of a million** estimated coverage views (270,100). We also undertook 17 media interviews during the campaign.

To ensure we had the widest engagement reach possible for our DSO events, we went digital. Twenty people participated in our DSO webinar and the webcasts of our DSO event have been viewed by over 400 more people. To support active contributions – we asked stakeholders to submit questions beforehand for both the

webinar and event via Twitter and responded to those questions during and post event to ensure stakeholders were influencing the on-going discussion.

► **90%** of stakeholders feel better informed about the issues influencing DSO following engagement.

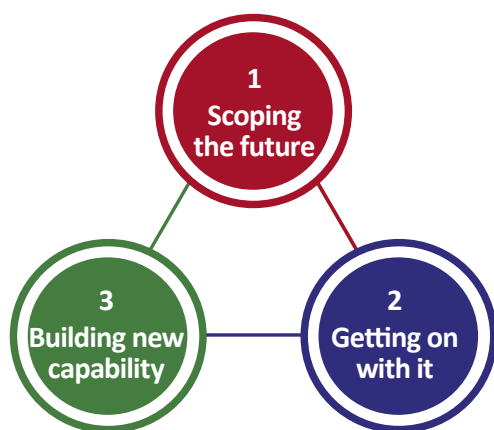
► **54%** of stakeholders supported our electrical losses approach and 39% wanted more information about losses, so we have developed a losses introductory animation and launched our losses online community.

► **86%** of stakeholders agreed with our DSO vision and direction of travel.

NEW

Strategy informed by stakeholder feedback

Our DSO strategy, informed by stakeholder feedback, has three priorities:



1
Solving the big open questions of market design and industry architecture

2
Providing new infrastructure and processes

3
Low regrets steps to demonstrate and learn

Engaging on DSO:

65%
of attendees supported the DSO strategy.

35%
of attendees still unsure/wanting clarification.



"I thought it was a fantastic event. I thought the DSO vision was heading in the right direction. Any doubts are around the DSO taking too much role as an aggregator or providing flexibility services itself, but you are certainly looking at the right questions. I am very encouraged by you looking at EVs as an opportunity rather than a threat."

Helen Stack Centrica

"Great start to the thought process of what it is to be a DSO. Need to think about the different cost models to allow flexibility to be realised."

David Brown Conor Energy

In addition to our overarching engagement around the programme we continue to engage our stakeholders, to support development and delivery of the three elements of our DSO strategy.

Attendees wanted us to prioritise enabling 'Customer Flexibility' as opposed to cutting costs by actively managing distributed resources. They want us to do this by creating

an efficient, flexible system, balancing supply and demand and accelerating the transition to a low-carbon energy system through developing smart services and infrastructure.

1. Scoping the future – pioneering research and learning

Through effective collaboration and co-creation, with our stakeholders, we currently have 16 innovation projects underway. A number of these are focused on supporting our

development of DSO, testing the practicalities and opportunities of electric vehicle and battery storage and much more. Many of these are funded under the Network Innovation

Allowance and as such, stakeholder engagement and effective collaboration is vital to the shaping, prioritisation, development and delivery of these projects.

Initiative

SCALED UP

Building on our partnership last year with Nissan, Nuvve and Newcastle University installing one of the UK's first Vehicle-to-Grid (V2G) chargers, we are now a partner in the world's first, large-scale trial of V2G technology to help us learn about the relationship of EVs and batteries to support the future needs of our stakeholders and customers.

The **£9.8m** government-funded project, E4 Future, will be led by Nissan and involves experts from Newcastle University and Imperial College, London, Northern Powergrid, UK Power Networks and National Grid and V2G aggregator Nuvve.

The technology allows electric vehicles (EVs) to be fully integrated into the electricity grid. Private owners and businesses with large EV fleets will have the opportunity to create mobile energy hubs by integrating their vehicles into the grid. Connecting to the grid to charge the battery during low-demand, cheap tariff periods, drivers will have the option to then use the electricity stored in the vehicle's battery to feed back to the grid.

NEW

We are working with Northern Gas Networks, Newcastle University and the National Centre for Energy Systems on InTEGREL (Integrated Transport Electricity Gas Research Laboratory), the UK's first fully integrated energy systems research, development and demonstration site.

The **£30 million** site in Gateshead is an incubator for cutting-edge whole energy systems technology, allowing forward-thinking businesses to test their ideas in real-world conditions, and on a large scale, such as the decarbonisation of heat, energy storage and transport issues.

Outcomes and benefits

► Improved grid capability to handle renewable power, making renewable sources even more widely integrated and affordable for our customers.

► Potential to generate additional revenue for EV owners.

► Supporting the UK government's aim for nearly all cars to be zero emission by 2050.

► Working to identify the most affordable and practical solutions to move customers onto low carbon, low cost energy.

► Ability to test for the first time how electricity and gas can work together across a whole energy system optimised around customers' needs.

2. Getting on with it – learning by doing

Where technologies exist and a ‘learning by doing’ approach is appropriate, we have been

keen to work collaboratively with other parts of industry to deliver benefits for customers today

that also unlock understanding to inform future projects and roll-outs our stakeholder value.

Initiative

Building our battery storage understanding

We have teamed up with Moixa and Energise Barnsley in a ground-breaking trial to demonstrate how clusters of home batteries can increase capacity on the electricity network and enable more homes to install solar panels.

Smart batteries have been installed in **40** homes and linked in a virtual power plant in the first project to study how this solution can reduce peak solar output onto the electricity network when there is low local demand.

To disseminate the learning from this programme, an animation has been developed and can be accessed from www.northernpowergrid.com/innovation

Outcomes and benefits

- ▶ Allow more homes to go solar without imposing new costs on network operators and therefore customers.
- ▶ Significantly reduce peak solar generation output onto the network.
- ▶ Feed into national design guidance for low voltage networks supplying housing estates.
- ▶ Deliver insights to develop incentives which we hope will allow us to roll out solar plus storage to tens of thousands of homes in our region.
- ▶ Solar panels typically cut electricity bills by up to 30% and batteries can add further savings of up to 20% by allowing residents to use free energy, generated during the day, at night to save money.
- ▶ Inform how the inclusion of batteries in solar schemes can enable connection of more PV panels before further network reinforcement is required.

3. Building new capability – future-proofing our network

In January 2018 we were excited to announce the details of our **£83 million** ED1 programme to prepare our region’s economy to support the future needs of our stakeholders and customers, including rapid growth of electric vehicles, domestic heat pumps and renewable power.

Our programme is the UK’s most comprehensive network upgrade. It is creating the backbone of a smart grid, supporting the North’s ambitions to put the low-carbon technology at the centre of its economy and enabling solutions that could

save our customers up to **£500 million** by 2031 – an important priority for our stakeholders

Smart Grid Enabler engagement

81% of our stakeholders supported our plan for this investment to:

- ▶ Use new technology to enable greater capacity for our customers to be connected without adding as many new cables or transformers as would be traditionally needed, saving costs.

- ▶ Give customers the opportunity to participate in demand-side response to reduce the cost of running the network.

At the third event of the year to share our thoughts on the transition to DSO, one stakeholder said: *‘Very commercial but not too technical. An excellent level of understanding from the speakers overall. Great, because you had engineers speaking on the technicalities of the projects.’*

Outputs

NEW

Smart Grid Enabler programme

The programme will upgrade equipment dating from the 1950s to the 1990s and install new technology. It includes:

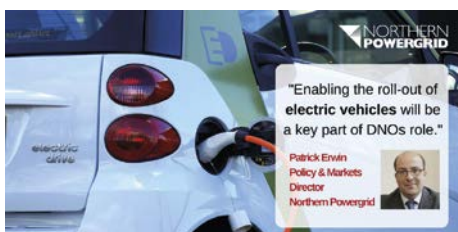
- ▶ Installing high-bandwidth digital communications links to over **860** major substations and **7,200** secondary substations, replacing old analogue links.
- ▶ Replacing transformer monitoring control units in **750** major substations. This equipment allows us to control voltage to support low carbon technologies connecting to the grid.
- ▶ Replacing or upgrading substation controllers in over **860** major substations.

- ▶ Installing monitoring equipment for the first time in **1,300** secondary substations and obtaining data from **2,000** existing sites.
- ▶ Establishing a dedicated smart network policy and development team to coordinate the programme, which will be carried out by a team of nearly **100** specialist engineers.
- ▶ Recruiting and training staff in the skills needed to install and operate more dynamic control systems, develop the smart solutions they will enable and integrate these into routine operations.
- ▶ By 2023 we will have replaced or installed more than **1,900** substation and transformer control units that allow engineers to monitor and control equipment in real time.

Outcomes and benefits

The programme will:

- ▶ Give us the potential to avoid spend of up to **£500 million** more than if we had to rely on conventional solutions from 2023 to 2031.
- ▶ More resilient, future proofed network will reduce power interruptions for our customers.
- ▶ Give us the capability to develop sophisticated new ways of managing the network.
- ▶ Underpin our transition to DSO, providing a platform to roll out smart, cost-effective solutions to actively manage a network with complex power flows that are hard to predict.
- ▶ Make us ready to support rapid growth of electric vehicles, heat pumps and solar power in the next decade, while maintaining a reliable system and keeping costs as low as possible for all our customers.
- ▶ Give us the ability to support the ambitions of the Northern Energy Taskforce for the North to lead the UK’s low-carbon transition and create a regional economy that could be worth **£15 billion** a year and support **100,000** jobs by 2050.



Jenny Saunders, consumer vulnerability expert, will drive discussions at our next DSO event about how we can support vulnerable customers to ensure no one is left behind.

NORTHERN POWERGRID