

Electricity Distribution

Part two

Stakeholder engagement outcomes

Ofgem Stakeholder Engagement
and Consumer Vulnerability Incentive
2022/23



Welcome

National Grid Electricity Distribution (NGED) is the Distribution Network Operator (DNO) responsible for delivering electricity to eight million customers across the East and West Midlands, South West England and South Wales.

This document is the second part of National Grid's submission to the 2022/23 Stakeholder Engagement and Consumer Vulnerability Incentive (SECV).

2022/23 is the final year of the eight year Business Plan period called RIIO-ED1. This stands for:

Revenue = Incentives + Innovation + Outputs (Electricity Distribution 1)

It is the regulatory framework introduced by Ofgem and is designed to drive clear outcomes and benefits for consumers, and provide companies with strong incentives to step up and meet the challenges of delivering a low carbon, sustainable energy sector.

Ofgem's SECV Incentive is an annual scheme, which encourages network companies to engage proactively with stakeholders in order to anticipate their needs and deliver a consumer focused, socially responsible and sustainable energy service.

Our submission to this incentive is divided into three parts:

Part one

Our stakeholder engagement and consumer vulnerability strategies and key evidence (demonstrating that we meet Ofgem's minimum requirements).

Part two

Key outcomes resulting from our stakeholder engagement activities.

Part three

Key outcomes resulting from our consumer vulnerability activities.

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Stakeholders having round-table discussions at our stakeholder workshops in Bristol and Nottingham in September 2022.

1. Introduction

While we maintain, operate, and expand the local electricity network, every one of our colleagues is clear that our primary role is to power the lives of the communities we serve. It is this focus on doing the right thing for our customers that motivates us and keeps us going.

This philosophy is also what guides our approach to engagement, making sure we use ongoing and meaningful customer and stakeholder participation to shape the local energy network.

At the turn of the year, we agreed our most ambitious business plan with Ofgem, a plan built off the back of our largest ever stakeholder engagement exercise. More than 25,000 stakeholder views directly influenced how we'll be investing £5.9 billion into the electrification of our region, helping to achieve ambitious net zero targets set by 124 Local Authorities and ensuring customers in vulnerable circumstances are proactively supported.

Getting these views on our emerging plans is vital, but that doesn't replace the need for our ongoing engagement programme. Throughout 2022 we have engaged and collaborated with more than 42,000 stakeholders across the region at over 4,000 engagement activities.

This has allowed us to deliver more than 300 positive outcomes for our customers in-year; from increasing how we utilise flexibility on our network and speeding up the electric vehicle application process to installing community solar and biodiversity education schemes, engagement is adding real value across the region.

This submission demonstrates some of the most impactful ways we use far reaching and thorough engagement with our customers and stakeholders to directly influence the decisions we take, and how we respond to challenges that arise. It is this engagement-led approach that fills so many of our colleagues with pride that they work in and contribute towards the success of a business that truly puts customer first.

Christopher Hayton,
Executive Sponsor for Customer and Stakeholder Engagement



2. Engagement shapes our objectives

Each year we engage increasing numbers of stakeholders throughout the development and delivery of initiatives, using bespoke methods to reach, and collaborate with, different groups. Triangulating key insights and priorities across this extensive engagement programme ensures a full range of views are used to drive decision-making, involving 42,000 stakeholders across more than 4,000 activities in 2022/23. Synthesis reports collate and summarise individual pieces of feedback in a single repository which, combined with surgeries, bilateral consultations and partnerships, enables National Grid leaders to turn engagement into action.

This year, the following objectives have been identified as a result of our engagement:

Collaborate with communities to maximise social and environmental value.	Take a 'flexibility first' approach to unlock the network for net zero.	Use data to drive customer service improvements.	Digitalise processes to enable huge increases in the volume and speed of low carbon technology (LCT) take up.	Support Local Authorities to deliver net zero in practice.
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Continually returning to stakeholders throughout the year has enabled us to develop and refine what these objectives mean in practice, while key metrics, including social value measurement, ensure we maximise the positive impact of delivery:

Through our Social Contract, we're helping communities unlock the benefits of renewable energy.	We've grown the flexibility market and released capacity on the network.	We've adapted our power cut data to support telecoms customers in real-time.	Our new online connections portal means customers can use their LCTs straight away.	We've developed a blueprint for enabling whole-home retrofit at scale.
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What to look out for in this submission

- We have demonstrated stakeholder collaboration in practice:** providing a clear line of sight between key stakeholder drivers, our engagement and action, and the outcomes delivered for customers as a result.
- Our approach to social value has evolved:** we have included key examples of where social value has been used as a decision-making tool in evaluating new projects and pilot schemes to drive better business decisions.
- We have selected initiatives that showcase how we triangulate, and respond to, different stakeholder needs:** providing greater detail that evidences how a need was identified and why a particular approach was selected.

3. Our stakeholder engagement strategy

We know that meaningful engagement is an ongoing, cyclical process and that collaboration is the most effective way of gaining new insights. At National Grid we use a four stage process to ensure we always make decisions with, not on behalf of, our stakeholders.



Below are examples of how we have engaged with some of our key stakeholder groups across the stages of this process in 2022/23:

<p>Identifying emerging stakeholder needs</p> <p>From our engagement with customers and stakeholders, we know that one of the biggest net zero priorities is increasing the availability and accessibility of electric vehicle (EV) charging infrastructure.</p> <p>That's why we collaborated with motorway service operators to deliver an efficient, compact and cost effective solution for on-the-go charging (Part two, page 8).</p> <p>We know it's crucial to proactively identify and support other key stakeholders in the electric transport revolution. We have engaged with multiple sectors including airports, seaports, the MOD and NHS, where we can provide thought leadership and experience to support strategic planning for their significant future EV requirements.</p>	<p>Co-creation with Local Authorities</p> <p>Responding to Local Authorities' (LAs) need for enhanced support, we have invested in dedicated strategic engagement resource to not only meet stakeholders' demand, but proactively coordinate and assist local area energy planning. When deciding how best to support LAs we considered a range of options, such as devolving collaboration exclusively to our local teams. However, while stakeholders valued this tailored engagement, they identified that central coordination would better drive consistency and best practice sharing.</p> <p>More than 119 surgeries this year have helped us co-create actions that are benefitting LAs across our region. For example, we're helping LAs plan efficiently, by tailoring our data on renewable generation projects in the pipeline by LA area and increasing its granularity (Part two, page 9).</p>
<p>Deliberative customer insights</p> <p>We have an established group of 96 customers, including business and future customers, whose knowledge and confidence we have built over several phases of deliberative engagement. This year, we sought their views through a series of 'homework' tasks and 18 focus groups, designed to provide essential context and gather their spontaneous priorities.</p> <p>We tested that the actions we'd developed to address previous feedback resonated with stakeholders. They endorsed changes made to our Social Contract Strategy, which they played a key role in developing.</p> <p>They also identified 'immediate', 'long term' and 'enduring' focus areas to ensure our strategies keep pace with changing customer expectations. For example, in the immediate term, they wanted to see us having a more active role in 'Educating, Explaining and Encouraging' sustainability. This has helped drive the development of an education-led 'citizen science' approach to biodiversity assessment (Part two, page 3).</p> <p>Separately, we asked them to consider specific initiatives, and they suggested refinements which have broadened the scope of our community solar panel commitment beyond just schools (Part two, page 3).</p>	<p>Customer Panel adds value at every stage</p> <p>Topic-specific surgeries throughout the year have enabled our Customer Panel, a longstanding group of 29 expert members, to provide in-depth feedback to the business leaders responsible for delivery in these areas. Surgeries on connections, community energy and vulnerability led to the development of six actions, including extending our fuel poverty innovation fund from six to 12 months to provide partners with greater stability and drive innovation (Part three, page 8).</p> <p>Our 'buddy' system enables National Grid colleagues to work closely with expert Customer Panel members, who provide advice and expertise on specific activities. This approach has already enhanced customer outcomes, for example refining the development and delivery of our Social Contract (Part two, page 3). Partnering with a Customer Panel 'buddy' from Wessex Water also enabled two-way insight sharing to refine our winter preparedness communications campaign (Part three, page 4).</p> <p>Outcomes and learnings from the campaign were then played back to the wider Panel for review. Their feedback, triangulated with social value, campaign data and PSR sign ups, helped pinpoint the most impactful methods to use in future communications.</p>

4. Our Social Contract in action

Our Social Contract is just that; a contract. It sets out our long-term commitment to operate in a way that actively benefits the environment, communities, our colleagues and the customers we serve. Co-created with stakeholders, it has already delivered huge community benefits by ensuring we maximise the positive impact of our actions.

This year we updated the Social Contract, setting out our strategy for 2023 and demonstrating progress achieved in the first year of delivery. Social value was used as a key tool to assess our impact, with £1.7 million of net value delivered across the 10 initiatives modelled, over five years. As a result, approaches piloted this year through our Social Contract are being rapidly scaled-up, including our community solar panel initiative (see below) and iPad redistribution project (Part three, page 10).

Unlocking the benefits of renewable energy in the community

Identifying the need

As we have developed and commenced delivery of our Social Contract, stakeholders have reinforced the need to partner with communities and tailor our approach:

“To have a real impact, you need to find out the nuts and bolts of what’s happening on the ground and identify what each local region needs to live better. Then you can co-produce actions that will drive real change.”

Charity - June 2022 workshop

Local councillors at our regional engagement workshops emphasised the unique role schools and community buildings play as hubs of support, information and awareness.

Surging energy prices mean that these venues are also facing huge financial pressures. Stakeholders, including our deliberative customer group, feel that National Grid is well-placed to help them unlock the benefits of renewable energy - bringing down their bills, educating others about renewable technologies, and supporting the community’s transition to net zero.

Our engagement and action

We have developed a ‘rural living laboratory’ - working in close partnership with a community in Gloucester to explore how the principles of our Social Contract can be realised at a local level to deliver the greatest benefits.

We created a working group of key regional stakeholders, including a local ecologist, school staff and governors and National Grid colleagues, who collaborated to test a holistic approach to community sustainability, centred around a local secondary school.

A model for inclusive engagement

Solar panel installation

Our Community Energy Engineer provided in-depth connections advice to enable the installation of an 19kW solar panel array, with funding from National Grid. We helped the school submit an application for a further 495kW of solar panels and battery storage, to support their long term sustainability goals.

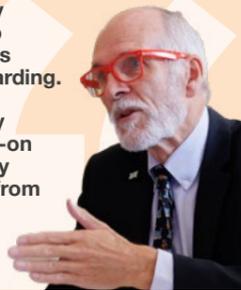
Biodiversity

National Grid’s Environment Team has collaborated with a local ecologist to develop an innovative ‘citizen science’ model for quantifying biodiversity net gain and carbon capture (see page 4). The model uses the principles of ‘para-taxonomy’ (where non-expert volunteers sort insect samples to assess species richness) to understand the ecology of National Grid sites and develop plans for generating biodiversity net gain.

We tested this approach through four student workshops at Rednock School and, in parallel, with our own colleagues, to inform land management both on the school grounds and around our substations.

“I have worked with the Customer Panel as a specialist in low carbon energy technologies and applied systems thinking. Helping to formulate the Social Contract and taking the opportunity to help develop policy into practical implementation is both challenging and rewarding.”

Richard Hellen
The Schumacher Institute (Customer Panel ‘buddy’)

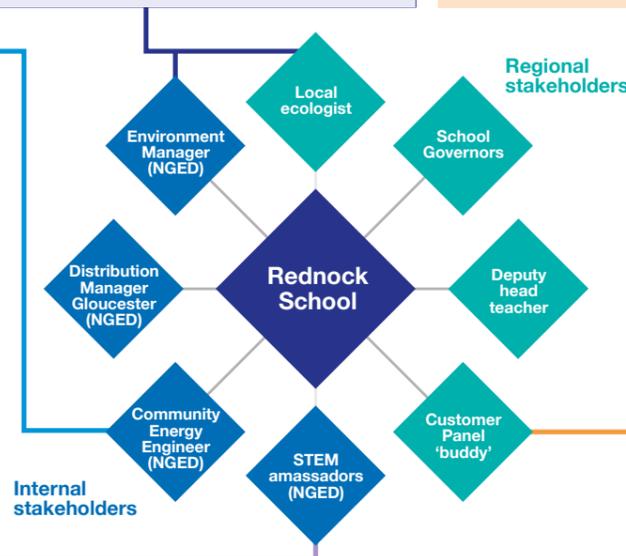


These projects are already generating exciting follow-on activities in our community which will benefit greatly from the relationships we have developed with National Grid staff.”

Science, Technology, Engineering and Maths (STEM) outreach

Ambassadors from our local depot engaged with 120 students on the role of National Grid, net zero and careers in STEM.

Building on this, we are working with school staff to pilot a ‘Net Zero Community Challenge’ to engage students in sustainability projects. The Challenge is being tested with Rednock students before being scaled across our region.



Customer Panel ‘buddy’ system

Our first Customer Panel ‘buddy’ has supported both the development of the Social Contract, and its implementation in a local, rural context.

Close collaboration via weekly meetings has been vital to the development of our work at Rednock School, providing challenge and steer that has helped National Grid identify and deliver wider community benefits. Regular feedback to the wider Customer Panel has helped ensure a breadth of expert input as the pilot has progressed.

Outcomes

Developed a scalable model in partnership with Rednock School stakeholders, which will be rolled out to 22 schools and community buildings annually, later in 2023.

Energy costs and carbon emissions reduced for Rednock School, with 19kW of solar panels generating 17,000kWh per year.

Seven students developed para-taxonomy skills through four biodiversity workshops, and 120 were engaged on STEM and careers in National Grid.



Social value

Reduction in energy bills and carbon emissions for the school are delivering a SROI, over and above every £1 spent of: **-£0.41** over one year (negative due to initial installation costs) and **£1.24** over five years.

“Rednock School is pleased to play a part as a pilot project in National Grid’s support for net zero communities.”

Not only will we benefit from reduced energy bills and a more sustainable school environment but students are gaining the skills and understanding needed for 21st century living.

As an important part of the local community, the school will be helping to meet net zero challenges.”

David Alexander
Head Teacher, Rednock School



Partnering with experts to deliver meaningful biodiversity net gain

Identifying the need

Stretching from Lincoln to the Isles of Scilly, our network covers diverse rural and urban habitats. Assessment of our operational sites has shown protected species like toads, slow worms, otters and the soprano pipistrelle bat often live close to substations, and our site management has direct implications for local ecology.

Synthesis reports highlighted that reducing carbon while improving biodiversity is a recurring priority for stakeholders, particularly in light of significant habitat and species loss in the last 50 years. Stakeholders urged National Grid to lead the way with responsible, local greenhouse gas removal schemes that contribute to wider ecological improvement in the UK.

In addition, a clear majority of attendees at our sustainability workshop encouraged sharing learnings on biodiversity and carbon offsetting, as this is a relatively new challenge for organisations. Our experience is invaluable in helping others reach their targets where resources and skills could be a barrier.

Our engagement and action

We have a clear responsibility to tackle habitat decline head-on, and a strong mandate from our stakeholders to do so. Working with experts, we’ve taken a multi-faceted approach, combining direct action, innovative research and practical trials to identify ways of going beyond our legal requirement to deliver 10% biodiversity net gain at new major projects. Collaboration between National Grid leaders in our Social Contract Working Group has further highlighted the wider social impact of improving biodiversity for our colleagues and communities.

Forest creation in the heart of England

We partnered with the Heart of England Forest to improve biodiversity potential and offset carbon emissions, by creating 59 acres of new native broadleaf woodland. The partnership forms a blueprint for biodiversity enhancement across our region, bringing together tree planting and conservation volunteering for National Grid colleagues, to deliver community-centric carbon offsetting and habitat creation.

Improving our impact across the entire value chain

A robust biodiversity strategy must take into account the full scope of our impact on nature and be embedded throughout our organisation, informing our operational, waste and procurement processes. Working with environmental management experts, we have taken an innovative approach, unique for DNOs, with a ‘Biodiversity Footprint’ assessment to understand and improve the environmental impact of our entire value chain.

This considers our ‘upstream’ (our supply chain, including the extraction, processing and manufacture of materials), direct operations, and our ‘downstream’ (our contractors, product

retirement, asset recovery and disposal). Our findings have been shared with other DNOs and the ENA, to drive UK-wide benefits.

Innovative approaches to biodiversity net gain

In partnership with Evidence Nature, we developed a unique biodiversity assessment, focusing on species indicators of habitat quality, and trialled it at five substations. While we are required to achieve 10% biodiversity net gain on all new projects, we have opted to also look at our existing sites, which are only accessible to trained colleagues and contractors, offering a relatively protected environment for nature recovery. Utilising ‘para-taxonomy’ principles, this approach is enabling us to achieve biodiversity net gain, while also providing much-needed insect data to support important scientific research happening in our region.

Outcomes

59 acres of new native broadleaf woodland created, by planting 33,250 saplings using innovative plastic-free methods.

Embedding the ‘Biodiversity Footprint’ framework across our business to improve our environmental impact - prioritising procurement processes.

Driving improvements in ecology with a brand new approach, using species indicators to tailor land management plans at substations.

Social value

The benefits of our work to create new native woodland (flood protection, reduced carbon emissions and plastic) are delivering a SROI, over and above every £1 spent of: **£0.44** over one year, and **£1.03** over five years.

Next steps

We are selecting optimal locations where biodiversity net gain can be maximised, by conducting biodiversity baseline studies at 40 existing sites.

“This study has piloted an innovative and intuitive biodiversity net gain method designed to be audited by non-experts that will place NGED as a market leader in a new way of thinking about how non-operational land is managed and providing the evidence of its success.”

Kathy Meakin
Evidence Nature



5. Flexibility First Approach

Collaboration with stakeholders and market participants is enabling us to expand our use of flexibility. By investing in flexibility we can manage constraints on our network, contracting with generators and consumers who can reduce their demand for electricity or increase output during peak periods, in return for a financial payment. This is maximising our existing network, so customers can connect their low carbon technologies (LCTs) quicker.

Our largest ever flexibility programme is unlocking capacity so our customers can connect

A growing flexibility market
We procured more flexibility than ever before, contracting **777MW of flexibility** via **244 providers** to manage peak demand and unlock capacity for growth on our network.

Deploying flexibility to support the network
We utilised **1.2GWh of flexibility** to support our network operations, saving **126 tonnes of carbon**.

Capacity at the lowest cost
We sought **£1.9 million** of annual flexibility contracts from the market, which would release the capacity equivalent to **£160 million** of network reinforcement.

Substantial domestic participation
Domestic households accounted for **20.5% (159MW) of flexibility** contracted, providing direct financial benefits to customers.

Social value

As a result of this investment in flexibility, carbon and network efficiency savings are delivering a SROI, over and above every £1 spent of: **£2.74** over one year and **£9.25** over five years.

Getting ready for real-time flexibility procurement with our innovative Market Gateway

Identifying the need

Flexibility is a cheaper alternative to reinforcement, unlocking the capacity to connect low carbon technologies and renewable energy.

Creating a more efficient and flexible energy system is therefore integral to driving the transition to net zero. We have a clear view that this system must be developed in partnership with stakeholders, and led by the market, to ensure it is fit for purpose and delivers the best outcomes for our customers.

Ongoing engagement with Flexibility Service Providers (FSPs) highlights that demand for new flexibility products and services is ramping up. Feedback received through our consultations and industry engagement has illustrated the need for faster, simpler procurement, to enable the growth in volume and capability that stakeholders require. In particular, we heard that the tender process must become more agile to support the launch of new products and enable wider participation.

Our engagement and action

Providing greater transparency in a fast-moving sector

The pace of change in this emerging sector and the volume of stakeholder feedback we are generating as a result drove us to increase the frequency of our procurement statements. In addition to the required annual publication in April, we were the only DNO to provide an interim update of our Distribution Flexibility Procurement Statement at the end of 2022.

Reflecting the pace of change, the update has given stakeholders early visibility of the significant development in our capability and systems, so they can prepare for the rapid deployment of new products and services.

A 'gateway' to massive growth in the flexibility market

We are unlocking market innovation and new products with a streamlined tender process, bringing us closer to procuring flexibility in real-time. Our new online procurement portal, the Market Gateway, standardises and digitises the commercial and technical registration processes, enabling a level playing field for suppliers, aggregators and marketplaces to develop flexibility markets on our behalf.

This has enabled us to accommodate new products (e.g. for domestic customers) at different timescales, facilitating a more dynamic market and paving the way for FSPs to participate in week-ahead procurement.

In response to industry engagement, we have evolved to align with the approach taken by the Electricity System Operator (ESO), so that through the Market Gateway, FSPs are pre-qualified and awarded a framework contract to view and bid for market opportunities.

This reduces the administrative burden of gaining a contract, registering assets and trading services to enable the anticipated growth in, and frequency of, market participation.

Outcome

Our Market Gateway is **saving an estimated 1,120 hours** annually for FSPs in time spent registering for flexibility opportunities.

"We've heard from stakeholders over the last 18 months that flexibility needs to be more accessible to a broader market, and this mandate has driven our approach."

Through the Market Gateway, we're standardising our procurement digitally to enable scale and interoperability, introducing new products targeted at domestic customers and moving closer to real-time flexibility - while putting simplicity and inclusivity front and centre.

This is underpinned by the most comprehensive and accessible data in the industry, which is helping others to develop UK flexibility markets on our behalf."

Ben Godfrey
Director of Distribution System Operator, National Grid



Bringing flexibility to life for our domestic customers

Identifying the need

Energy security concerns, exacerbated by the war in Ukraine, have increased the drive to use flexibility to improve energy resilience.

In particular, domestic flexibility services have gained traction with stakeholders as a way of balancing the national energy system and helping customers earn revenue amidst soaring energy prices. Learning from our 'Smart and Fair?' collaboration with the Centre for Sustainable Energy (CSE) and Scottish and Southern Electricity Networks (SSEN), we know that flexibility services must be inclusive by design to drive the widest possible take-up.

Moreover, key customer insights from the development of our Smart Energy Action Plans (Part three, page 9) highlight that for many people in vulnerable situations, affordability remains the highest priority. Engaging these customers with the low carbon transition is therefore challenging, but flexibility tariffs represent a key opportunity for customers to participate and benefit from lower bills.

In this context, it is important we harness customers' intensified engagement with their energy use to drive domestic participation in flexibility services, increasing our network capacity so they can enjoy the benefits of rapid LCT connections and financial savings.

Our engagement and action

We are embedding learning from an innovation trial into business as usual, with a new flexibility offering targeted at domestic participation. 'Sustain H' was an innovation scheme trialling domestic participation in flexibility. The project findings, recommendations from project partner Everoze, and extensive consultation with stakeholders have shaped the enduring product, 'Sustain' which procures flexibility on our low voltage network. It's crucial that as an industry we facilitate interoperability through standardisation, so while Sustain builds on our innovation trials, it is also aligned to the Open Networks standard framework.

This has been facilitated by our 'Evolution of Distribution Flexibility Services' consultation, which gives transparency around decision making to drive deeper engagement. Working with experts, we assessed multiple options around technical issues and pricing to turn a complex set of factors into a simple, accessible product that is easy and low cost to roll out, whilst balancing the needs of a dynamic, expanding market.

Low-effort domestic participation

Extensive engagement with Octopus Energy and LCT providers has helped create a product which minimises complexity and maximises opportunities for participation by design. We have built partnerships with several UK supply companies and aggregators (e.g. EV chargepoint operators and battery storage providers) who manage the tariff, sending customers demand signals, measuring their energy use and paying them accordingly.

Clear expectations for flexibility providers, ahead of time

Sustain H proved that a scheduled service is effective at leveraging domestic flexibility. Therefore, unlike our existing products, Sustain is a 'drop to' service, asking customers to reduce their energy use to a fixed baseline. It is scheduled ahead of time and procures flexibility in two fixed, four-hour windows every day, making it simple for customers to participate.

More opportunities for domestic customers to earn revenue

In contrast to the ESO offering, which is managing national balancing and only likely to call on services a few times over winter, Sustain is addressing network constraint management so calls on services everyday over targeted winter and summer seasons, giving customers more chances to participate.

Simple procurement enables high volumes of participation

The product has been facilitated by our new Market Gateway, and gives customers within the 1,360 initially identified areas the opportunity to participate. It can be stacked with other demand flexibility products or supplier tariffs to help further reduce customer energy bills.

Outcomes

This winter, Sustain is tendering for **92MW** of flexibility from households (equivalent to the demand of **almost 70,000 EVs**) across areas with **155,000 homes**.

£1.36 million paid directly to domestic customers will release capacity equivalent to **£36 million** of reinforcement on the low voltage network.

Social value

The network efficiency savings from Sustain are projected to deliver a SROI, over and above every £1 spent of: **£0.17** over one year and **£2.25** over five years.



6. Putting data at the heart of customer service

We've moved beyond simply making our data open; we engage on an ongoing basis with our stakeholders to ensure the data they need is available, up-to-date and in a format they can use.

Data-sharing to maximise targeted customer support

Identifying the need

In the aftermath of storm Eunice, we engaged extensively with Local Resilience Forums (LRFs) to understand what more we could do to help them support customers:

"With storm Eunice we were finding that energy was being restored quicker than [National Grid] were releasing data, so I'd say data is only as useful as how quickly you can produce it." Emergency Services - September 2022 workshop

This was reinforced by engagement with BT Group. Broadband cabinets having an unmetered supply means telecoms providers often don't know about a power cut until customers contact them. As landlines become digital ahead of the UK's PTSN switch off in 2025, visibility of power cuts on our network will be crucial, so telecoms providers can proactively support their customers.

Our engagement and action

LRFs challenged us to produce our power cut data in a format that could interact with their tools and applications, so we created an Application Programming Interface (API) version of our Live Power Cut map. This improves the usability of our data so LRFs can integrate real-time power cut alerts and updates and gives them greater visibility of what is happening live on our network to help them tailor their response and support for customers. Engagement with telecoms companies demonstrated that the API would be of great benefit, to help them identify affected broadband cabinets. Key learnings from trialling the tool with our National Grid Telecoms team, and feedback from O2 and Virgin, helped improve the usability of this data for their needs.

Outcomes

- Our Live Power Cut API has been used **28,802 times** since launching in November 2022.
- The API has enabled BT to **identify clusters of broadband services impacted** and attribute them to power outages, with a view to proactively notifying customers.
- Customers receive **better, targeted support** in a power cut as LRFs have access to live data updates.

Power Cut API has been integrated into multiple systems across BT Group, enabling customer service teams to monitor, analyse and diagnose issues affecting customer service, this now includes power outages, in the region supplied by National Grid.

From an engineering perspective BT are using Power Cut API to proactively make informed decisions, when deploying engineering and generator resources to fixed and mobile networks impacted by power outages.

Mark Freeburn
BCM & Civil Resilience Specialist, BT Group

Creating a digital picture to deliver a bespoke, efficient customer experience

Identifying the need

Building on stakeholder priorities identified in our annual workshops, our Customer Panel urged us to maximise our data and smart systems to improve customer experience. The smart meters and low voltage (LV) monitors on our network offer insights that could drive more proactive and efficient processes, if used effectively.

Our engagement and action

To understand the potential of smart metering and LV monitoring data, our Low Voltage Network Visibility project has designed, built and tested five use cases to prove the feasibility, required technical infrastructure and value in harnessing these data sources.

Proactive contact to households off supply, shifting the onus away from customers having to notify and explain a fault

We are trialling the use of smart meter alerts to quickly identify where customers on the same part of the LV network are off-supply, indicating that there is a network fault (rather than a fault at an individual property). With this data, we can rapidly understand the scale of the fault and number of customers affected to target proactive customer contact and send the right engineer(s) out first time.

Improved customer service when resolving voltage issues

Our trial has identified a more efficient and less disruptive alternative to installing voltage recorders at customer homes, by using smart meter data to monitor supply quality. This avoids taking customers off supply to install and remove a monitoring device, and means we can identify and solve the issue faster.

Tailored support for customers in vulnerable situations

We have built a dashboard using smart meter insights, so our PSR team can provide better support to customers in vulnerable situations (Part three, page 10).

Using LV insights to inform investment decisions

Working with expert partner, Regen, we are building customer archetypes using smart meter data, enabling us to optimise network planning activities in line with modern customer behaviours and assets to encourage and support innovation. We are also making our LV monitoring data open and available on a user-friendly external platform, providing greater visibility of network usage and capacity, LCT connections and carbon intensity.

Outcomes

- Improved **experience for 30,000 customers** estimated from these pilots, through proactive contact, better informed discussions and reduced disruption - expected to benefit **52,000 customers annually** once scaled.
- Efficiency savings of £15,500 per year** expected at our trial depot by reducing voltage recorder installations, with projected annual **efficiency savings of £882,000** once scaled.
- Availability of customer supply quality information is being **reduced from two weeks to one day** - with plans to further improve to **real-time data access** once scaled.

Social value

The measurable benefits of avoided voltage recorder installations (efficiency savings, reduced inconvenience for customers and avoided cost and carbon of travel) are projected to deliver a SROI, over and above every £1 spent of: **-£0.89** over one year (negative due to initial set up costs) and **£3.06** over five years.

Next steps

The significant benefits demonstrated by these trials have informed implementation plans for adoption at scale across the business.

7. Innovation to accelerate LCT take up

Demand to connect LCTs is increasing exponentially. We are harnessing the opportunities of data and digitalisation to deliver a customer-centric connections experience.

Getting our customers connected with just a few clicks

Identifying the need

By 2028, National Grid anticipates around 1,600 low carbon connection enquiries for each working day. As volumes of LCTs increase exponentially, we know that grid connections cannot be a barrier to customers' decarbonisation ambitions. Our Connections Customer Steering Group challenged us to digitise the customer journey - to provide rapid and simple connections and maintain our excellent customer service, while handling the hugely increased volume of applications. This was reinforced at our regional workshops:

"Having a platform that delivers smooth connections applications is absolutely critical." LA - connections workshop

Our engagement and action

We have taken a customer-centric approach, creating a digital connections portal to revolutionise the end-to-end journey so the process works for their needs and convenience. User testing workshops with key stakeholders shaped the portal's design, e.g. adding steps to walk customers through the online process, making tools simpler and using accessible terminology.

EV charger applications approved instantly, 24/7

Our new self-serve tool for EV connection applications provides an instant response (compared to 24-48 hours in 2021/22) with any remedial works taking place post-installation. The automated online process ensures we can deliver rapid connections at scale, and frees up our engineers to enhance customer service for complex enquiries and support those who prefer non-digital channels.

Instant quotes to inform connection plans

Building on the trial of 'ConnectLite' last year, our budget estimation tool provides an instant, estimated quote upfront so customers can make decisions and get connected quicker.

Virtual site visits at the customers' convenience

For connections that require a site visit, we are adopting an innovative new 'virtual inspection' tool which enables us to assess sites remotely, at a time that suits the customer. Through the tool, our engineers can conduct a live assessment from the office, using geolocation software to confirm they are viewing the right location.

Outcomes

- We're connecting customers faster, providing immediate responses and **instantly approving 57% of online EV applications** since launching in December 2022.
- Online applications have already enabled us to **save 153 hours**, compared to us manually processing these applications.

Social value

The time and efficiency savings of our online EV application tool are delivering a SROI, over and above every £1 spent of: **-£0.94** over one year (negative due to initial set up costs) and **£20.81** over five years.

Revolutionising electric vehicle charging infrastructure

Identifying the need

To meet increased demand over the next decade, motorway services require electrical capacity equivalent to powering 10,000 conventional homes. Our innovation project 'Take Charge' was developed in collaboration with motorway service operator, Moto, responding to the need for widespread, rapid EV charging at their sites. Engaging with Moto, we identified three key barriers:

- Space:** a conventional primary substation (needed to meet this capacity) is around 40 square meters.
- Cost:** providing this capacity through existing technology and infrastructure can be disruptive and expensive.
- Speed:** there are already over 1 million EVs in the UK, and charging solutions are needed at pace and scale.

Our engagement and action

Take Charge has paved the way for national roll out of on-the-go charging, solving obstacles to large scale EV take up. We are now deploying the standardised specification for our innovative unit, offering a pre-constructed and pre-packaged solution for charging at motorway service stations, which has been shared with the ENA.

By delivering 12,000kW of capacity, it ensures that up to 80 customers can charge their vehicles simultaneously at peak times, with 150kW rapid charging. The solution's 'plug and play' components can be deployed quickly and easily, while the compact unit, approximately half the size of a conventional primary substation, avoids the cost and disruption of site expansion.

Outcomes

- The brand-new 'one size fits all' specification provides the required electrical capacity in a compact, efficient unit, enabling **quicker and easier installation of EV rapid chargers** at motorway service stations.
- The unit's specification, shared with the industry, provides a **blueprint to other transport hubs**, such as airports and seaports, for how they could utilise this innovative technology.
- The project is estimated to deliver **savings of over £33 million across the UK** if rolled out to 75% of existing service stations.

"National Grid's Take Charge project could be a game changer for Moto if it is rolled out across the UK. This innovative solution will allow us to roll out the biggest EV charging network on the UK's motorways through access to sufficient electricity supplies.

At Moto we are transforming the EV charging experience on motorways with more than 1,650 ultra rapid EV chargers currently being rolled out at Moto service areas over the coming six - seven years and more than 350 chargers already in place. This partnership will support Moto in that mission and help us to deliver way above and beyond the Government's target of six rapid chargers at each motorway service site by the end of 2023."

Ken McMeikan Chief Executive Officer, Moto

8. Realising regional net zero ambitions

Tailored engagement with, and support for, Local Authorities (LAs) means we have greater visibility of their plans than ever before - unlocking the investment that will help them realise their net zero goals.

Unlocking key enablers of local area energy planning

Identifying the need

Bilateral engagement with every LA in our region demonstrates that they are at very different stages when it comes to producing a Local Area Energy Plan (LAEP). While only five have created a robust LAEP, 122 have declared a climate emergency, highlighting that although many LAs are engaged and ready to take action on net zero, there are several barriers to producing a LAEP:

1. Significant **cost, resource and specific technical knowledge** is required to produce a LAEP.
2. Processes for developing LAEPs are **inconsistent**, and can be dependent on multiple factors.
3. **Significant usable data** is needed to ensure LAEPs are robust and can catalyse network investment.

Our engagement and action

Recognising their distinct challenges and opportunities, our support has evolved to ensure we meet LAs wherever they are on their journey towards developing a LAEP. Rather than opting for a standardised approach, which could disproportionately benefit those that are more engaged and better-resourced, we are proactively building all LAs' knowledge and capabilities, levelling the playing field so their LAEPs are used to help us invest.

Resource and technical knowledge

Dedicated Strategic Engagement Officers proactively coordinate and deliver tailored engagement with all 124 LAs in our region. Their understanding of regional differences has enabled them to proactively engage those in early development of their LAEPs to share best practice and learnings from others who are leading the way. Overwhelmingly positive responses to this new approach have driven our decision to expand our strategic engagement resource, increasing the frequency and depth of support.

Consistency

We have adapted our engagement, incorporating forecasting and planning sessions into our local network investment events to drive consistent approaches across our region. Over 50% of delegates opted for an in-depth surgery to discuss their plans with the teams responsible for the planning, decision-making and delivery of our investment in their area.

Compatible data

We are working with national consultants, who are often commissioned by LAs to develop LAEPs on their behalf. Early engagement has enabled us to shape the approach, ensuring that they provide data in a format consistent with our forecasting and can drive efficient investment on the network.

Engagement in action

With the support of our Strategic Engagement Officers, eight LAs across Leicestershire gave us more detailed information on their plans which has enabled us to identify over £5 million of strategic investment on distribution transformers across RIIO-ED2.

This will ensure the distribution network is not a barrier to decarbonisation goals of customers in this region.

Outcome

Through close collaboration, we have developed a positive feedback loop between stakeholders and National Grid. The improved quality of LAs' plans as a result means 64 LAs have had their classifications uplifted, with 33 now assigned our most ambitious 'leading the way' status. Providing increased certainty, these classifications are helping **build the evidence case to drive proactive investment in our network**, to accommodate load growth and jointly meet local development needs.

Next steps

Learning from our bilateral engagement has shaped a new, step-by-step template with guidance to support LAs (and their consultants) when producing their LAEPs and help drive further consistency.

Our engagement and action

We worked with the SWNZH to better understand the data needed by LAs when planning new renewable energy schemes. With their feedback, we tailored the Embedded Capacity Register on our Connected Data Portal to show LA areas, providing a localised view of each renewable generation scheme in progress in their specific region.

Outcome

Our data has been used **9,036 times** since being tailored to LA needs in December 2022 - enabling LAs to create their net zero road maps efficiently, with an accurate and up to date view of the renewable generation already in the pipeline.

Paving the way to net zero with our data portal

Identifying the need

There is a huge amount of renewable generation ready to be connected to our network, with 33.7GW of accepted connections (and 8GW already connected) as of March 2023.

One-to-one surgeries at our local network investment events revealed that many LAs have targets for renewable generation to achieve their net zero goals, but don't have sight of this pipeline of future projects until developers contact them for approval.

"This could be useful for [Local Authorities] to know in relation to gauging how much effort they themselves need to make to meet their own authority wide generation targets." South West Net Zero Hub (SWNZH) - local network investment event

Next steps

Further refinement with the SWNZH identified the need for greater granularity to account for small-scale generation, which combined can make a significant contribution to net zero targets. As a result, we are increasing the scope of our data to show connections of 50kW or greater, providing visibility of an estimated 4,500 additional sites, totalling 740MW. We are reviewing eight other datasets on our Connected Data Portal to make them more useful for LAs.

A future-ready model for retrofit at scale

Identifying the need

More than 80% of the homes we'll be living in by 2050 have already been built. Our homes account for more than 21% of the country's total carbon emissions, with 75% of this coming from heating systems.

To reach the goal of net zero emissions by 2050, most of the 6.9 million homes in our region must be retrofitted with low carbon and energy efficiency solutions. Our engagement with LAs, Housing Associations and developers has highlighted that this is an urgent priority for them, while also demonstrating the unique challenges and level of support the sector needs from us.

Our engagement and action

Meeting changing customer needs

Early engagement has shaped a model for the collaboration and support needed to deliver whole-home retrofit at housing estate scale. Working with Swansea-based housing association Pobl, and project partner Sero, we have supported the delivery of the Penderi Energy Project, the UK's largest renewable energy retrofit scheme of its kind.

Distinct from our existing, new-build projects with Pobl, Penderi is a traditional post-war housing estate in an area of high deprivation. Comprised of 644 social housing properties, the estate is now benefitting from state-of-the-art renewable energy generation, energy storage and smart energy management technology.

Whilst connecting customers and installing infrastructure is business as usual for us, Penderi has presented the unique customer service and project management challenge of existing buildings and residents in situ, a need we anticipate to increase over the next decade.

Outcomes

Enabled the **retrofit of 378 Penderi homes so far with minimal disruption** - these customers are now benefitting from 1,400kWp of generation, 3.2MWh of battery storage and 4,500 solar panels.

Developed a **blueprint for housing estate retrofit**, in partnership with Pobl, to pave the way for future schemes. Learning from this project will be used as part of our strategic investment programme to identify areas where electrified heating is likely to be adopted in future.

Worked with 51 LA and social landlord stakeholders to **improve ORP submissions and delivery**.

Next steps

Smart meter data from Penderi will enable us to develop new assumptions about the impact of LCT retrofitted homes on our network infrastructure, so we can refine design policies to enable the pace and scale of installations needed to meet net zero.

We are sharing learnings from the Penderi project internally to drive a consistent approach across the business.

Significant 'hand holding' was required, including supporting Pobl's LCT tender process, providing a clear reinforcement plan to help stagger phases of retrofit across the estate, and coordinating the works (so that reinforcement and energy efficiency measures happened simultaneously) to reduce disruption for customers.

A blueprint for whole house retrofit at housing estate scale, Penderi required us to coordinate and deliver, with minimal disruption to residents:

1. 3.7km of additional LV mains circuit.
2. 700m of additional 11kV cable circuit.
3. Four new 1MVA distribution substations.
4. Upgrade of four existing distribution substation sites to 1MVA.
5. Removal of 261 looped supplies, impacting 522 houses.
6. Installation of three phase service cable at all houses.

Collaboration to optimise retrofit delivery

Learning from our collaboration with Pobl is driving improvements to wider retrofit delivery. We worked with the Welsh Government to support housing associations and LAs in the delivery of the Optimised Retrofit Programme (ORP) - a whole-house approach to decarbonising housing stock, which takes into account the home's fabric make-up, heating and energy storage. To advise and support with their ORP submissions, engaging directly with LAs and social landlord stakeholders, we helped strengthen their applications by ensuring they account for network impacts and the potential works required to deliver their ambitions.

"This [engagement] helped the landlords as well as the ORP Team understand further the significant project planning help National Grid can offer as well as the benefits of engaging with National Grid at inception of the plans to retrofit homes.

This has been especially noted in the ORP 3 submissions received and the enhanced liaison between Landlords and National Grid in the implementation of ORP works.

The awareness session also helped ORP in its work in the development of skills/training support for the sector."

Malcolm Davies
Senior Programme Manager/Housing Decarbonisation, Welsh Government





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