electricity north west

Bringing energy to your door

Local stakeholders engaging in roundtable discussions regarding their emerging priorities and co-designing our customer personas, during our flagship DSO Stakeholder Conference held in Manchester.

DSO Performance Panel Submission

Delivering a just Net Zero transition, through a commitment to customer value-led innovation, responsiveness and precision.

Ofgem Distribution System Operation Incentive 2023/24

Glossary

We have abbreviated terms throughout our report, where doing so improves clarity and readability. We provide the full form of an abbreviation at first use and then the abbreviation thereafter. A full list of the abbreviations used is provided below.

Aggregators	A new type of energy service provider which can increase or moderate the electrcity consumption (or generation) of a group of consumers, or prosumers, according to total electricity demand on the grid
API	Application Programming Interface - a set of functions and procedures allowing the creation of applications that access the features or data of an operating system, application, or other service
ANM	Active Network Management – an application of the Network Management System that manages network constraints in real-time by using flexible assets and varying the import and/or export of distributed energy resources
BAU	Business as usual
BiTraDER	BiTraDER will investigate, design, build and trial – live on the network – options for the introduction of a bilateral trading market through which large connected customers can trade their position in the merit order stack, which determines the order in which they are asked to curtail their output at times of high demand on the network
CEM Tool	The common evaluation methodology developed in the ENA Open Networks Project in 2020 for evaluating a range of potential solution options, especially flexibility, against traditional reinforcement. An MS Excel Tool, based on the Ofgem Cost Benefit Analysis, was developed using the methodology for the assessment by DNOs in RIIO-ED1
CIM	Common Information Model – a protocol for sharing electrical network data between parties
DER	Distributed Energy Resources - small-scale power generation and storage such as solar, wind and electric vehicles that operate locally and are connected to a larger power grid at the distribution level
DESNZ	Department for Energy Security and Net-Zero - The systems and processes needed to operate energy networks in the Net Zero carbon future
DFES	Distribution future electricity scenarios – forecasting plans for a range of scenarios for how low carbon technologies will be taken up and how the network could respond. The scenarios inform our investment plans and provide visibility of flexibility opportunities
DNO	Distribution network operator - company licensed to distribute electricity in Great Britain by the Office of Gas and Electricity Markets (Ofgem)
DFS	Demand Flexibility Service - allows participants to earn rewards for shifting electricity usage outside of peak demand hours
DNOA	Distribution Network Options Assessment
DSAP	Digital Strategy and Action Plan
DSO	Distribution Systems Operation - the systems and processes needed to operate energy networks in the Net Zero carbon future
EHV	Extra High Voltage - 33kV to 132kV network
ENA	Energy Networks Association – industry body which represents electricity transmission and distribution network operators
ENWL	Electricity North West Limited
ESO	Electricity System Operator
EV	Electric Vehicle
FES	Future Energy Scenarios - represent a range of different, credible ways to decarbonise the energy system in support of the Government 2050 target
FSO	Future System Operator. Ofgem intends to set up an expert, independent FSO with responsibilities across both the electricity and gas systems and the ability to expand its remit to additional energy vectors when needed. The FSO will be in the public sector, with operational independence from government
GDN	Gas Distribution Network
GIS	Geographic Information System
GSP	Grid Supply Point - the connection between the Transmission and Distribution Systems
HV	High Voltage - 6.6kV to 11kV network
ICCP	Inter Control room Communication Protocol
IOG	Independent Oversight Group - is a panel of independent individuals, with an independent Chair together with members representing each of the six advisory panels that Electricity North West Limited has established to fulfil its license obligation and ongoing stakeholder and customer input into its decision-making processes in important work areas
LAEP	Local Area Energy Plan - a data-driven and whole energy system, evidence-based approach that sets out to identify the most effective route for the local area to contribute towards meeting the national Net Zero target, as well as meeting its local Net Zero target
LCT	Low carbon technology, such as electric vehicles, electric heat pumps, solar and wind energy
LIFO	Last-in First-out, a 'Principle of Access' that defines how assets that contribute to the same constraint get curtailed when that constraint materialises. Under LIFO, each generation asset is assigned a position within a priority stack based on application date
LTDS	Long Term Development Statement – the requirement to publish network information, including the likely network developments across years 0 to 5, as detailed in standard license condition 25 and the Form of Statement
LV	Low voltage
MOM	Merit Order Management – Electrcity North West's system that derives the merit order or curtailment stack, using the curtailment index and flexible services contracts, which is shared with the Active Network Management system for delivery
MW	Megawatt
NDP	Network Development Plan
NIA	Network Innovation Allowance - a set allowance each network licensee receives as part of its price control allowance
NIC	Network Innovation Competition - annual competition where network companies compete for funding for research projects
NMS	Network Management System – a electricity network control system
ODMF	Operational Decision Making Framework – sets out Electricity North West's approach to decision making surrounding the use of network automation systems, flexibility, and human decision making. This includes the use of Flexible Services, Flexible Assets, and Flexible Connections
Ofgem	Office of Gas and Electricity Markets – the government regulator for gas and electricity markets in Great Britain
ROCBA	Real Option Cost Benefit Analysis
RIIO-ED1	Electricity distribution price control period, 2015-2023
RIIO-ED2	Electricity distribution price control period, 2023- 2028
RESP	Regional Energy Strategic Planners
SIF	Strategic Innovation Fund
SOO	Smart Optimisation Output - an initiative which aims to improve collaboration, transparency, and data use in the electricity sector

As a distribution network operator (DNO) focused solely on the North West, we take pride in delivering power and extra care to 2.4 million properties and over 5 million customers.

This is the first year of the Distribution System Operation (DSO) Incentive and we are proud to present our annual report which shows how through our DSO activities we are:

- accelerating Net Zero achievement through innovative and wide-reaching optimisation and control of the network
- enabling a democratic led energy transition through deep and meaningful collaboration, engagement and capability development with local authorities, communities, businesses, and individuals
- delivering economic growth and driving the green economy by fostering competitive and efficient flexibility markets.

Over the last 12 months we have made significant progress in delivering on both commitments made in our RIIO-ED2 Business Plan, and evolving our activities to meet our stakeholders needs.

Our 2023/24 report starts with an explanation of our DSO Strategic Framework and associated strategies. Thereafter it is presented in five thematic sections. Each section aims to provide a solid understanding of the range of DSO actvities that have been undertaken, highlights and challenges. It provides the strategic context, within which the case studies that follow delve deeper and illuminate areas of best practice.

Contents

2023/24 engagement highlights:

£9m OVER benefits realised

Fully-integrated Network Management System

50+ High precision data sets published

46% Increase in stakeholder utilisation of our long-term development plans

£96k Saving through 1st competitive tender for an end-to-end flex platform

300+ Local government stakeholders engaged through quarterly 1-1 surgeries

MORE THAN **2GW** Capacity released through technical capacity limits

Co-designed Operational Decision-making framework

1st to establish DSO Panel

Full DNOA transparency

Case study key:

To ensure our report is accessible, clear formatting, a legible font style and size, relevant images, charts, and graphs break up text and illustrate key points, with plain language used whenever possible.

The symbols throughout our report signify key aspects of our 2023/24 activities. They serve as a visual representation of the alignment with our four Strategic DSO Objectives, which were crafted based on a thorough comprehension of our stakeholders' needs and expectations.

Collaboration
Collaborative forecasting which seeks consensus on our region's investment needs.

Data sharing
Data sharing to drive competition, promote whole systems outcomes and support our region to decarbonise.

Value for money
Promoting flexibility services, including energy efficiency and smart network technologies, to deliver the best value for money for our customers.

Fairness
Initiatives that enhance fairness in decision making and accountability on performance.

I'm delighted to introduce our first submission reviewing our performance in transitioning to a distribution system operation. It's been a strong start to the RIIO-ED2 period. We began the year with a clear, prioritised roadmap of initiatives, designed together with our stakeholder community. **We've delivered 86% of our roadmap initiatives for the year, realised around £9m of net benefits** and put in place the critical enablers to deliver at least a further £200m.

We've been adaptive throughout the year, taking a **place-based approach and responding dynamically to the needs of our stakeholder personas.** In particular, we've not yet seen the take-up of low carbon technologies (LCTs) in the North West we'd anticipated, and we've taken a strategic decision, informed through stakeholder dialogue, to not invest in flexibility ahead of need, thereby **protecting value for money for our customers.** Instead, we've worked collaboratively across and beyond the region to **address the root causes of low demand, improve market access and put in place best-in-class systems for all market participants.**

We believe engagement and collaboration are critical to achieving a just transition to a Net Zero energy system. For that reason, we've ensured our **DSO Panel represents our local community,** and doubled down on supporting local place-makers to inform our plans and deploy LCTs at scale. Through **quarterly 'single conversation' surgeries with each Local Authority in our region,** we've provided bespoke support targeted to the needs of each locality. This investment has paid off, leading to our most informed DFES forecasts as well as enabling strategic local investment, like the delivery of Manchester's Bee Network.

I'm proud that throughout the year, we've started to see the direct benefits of the early investments we've made as the **industry's most digital DNO,** enabled by our network management system (NMS). **Our stakeholders trust that our data, forecasting, and decision making is robust.** From our open data hub, with carefully cultivated data in accessible formats, to our DNOA and Operational Decision Making Framework, we've offered enhanced levels of visibility into the decisions we make. While our 'bolt-on' tools seamlessly integrate with NMS, catalysing innovation, exemplified by our pioneering approach to Merit Order Management.

Finally, **I would like to thank our entire stakeholder community for the support they've shown us this year** and the significant time and insight they have shared that has driven all we've achieved. I look forward to us building on this progress together and through an accelerated trajectory of good-to-great performance, delivering a fair, Net Zero North West.

1.1 Strategic Framework

Across the North West, there is a consensus among stakeholders of the need to urgently transition to a Net Zero energy system, while ensuring that customers' bills are kept as low as possible. We are passionate about our role in **empowering regional progress** towards Net Zero through the delivery of **affordable services and infrastructure for decarbonisation**. In this inaugural year of RIIO-ED2, we've refined our **DSO Strategic Framework** to ensure that every initiative and investment is aligned to a shared vision. Crafted collaboratively with stakeholders during our first DSO conference, this framework articulates our overarching mission: **to enable customers to decarbonise, enable economic growth and provide affordable services and infrastructure vital for achieving Net Zero for all**. We will deliver our vision through four strategic objectives outlined in Figure 1. These objectives serve as the cornerstone for our programme planning, benefits analysis, and key business decisions, enabling us to transparently track and communicate our progress.

Figure 1: Our DSO Vision, Strategic Objectives and Guiding Principles

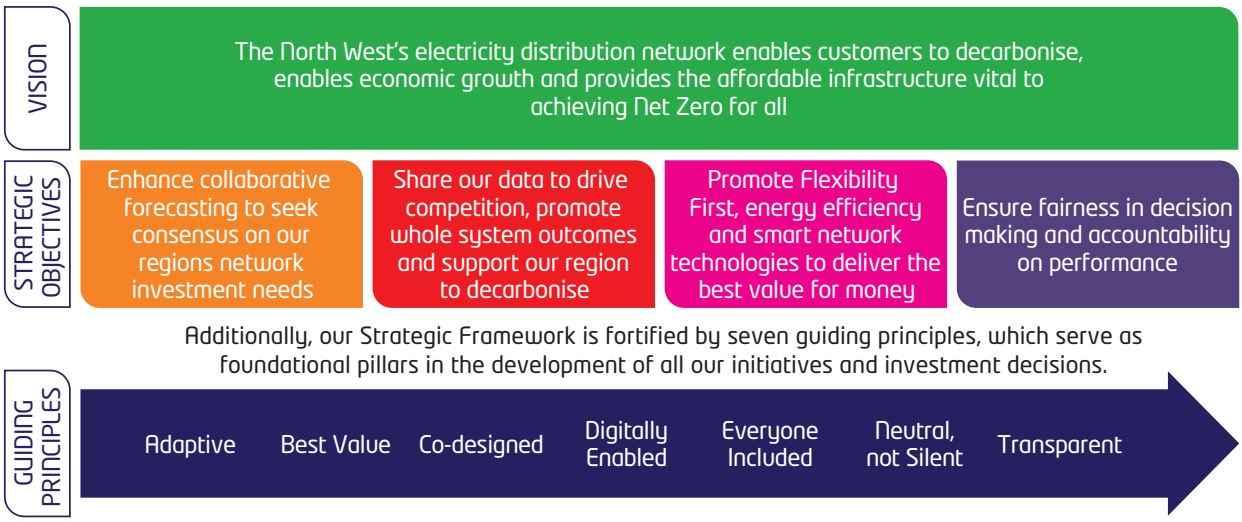
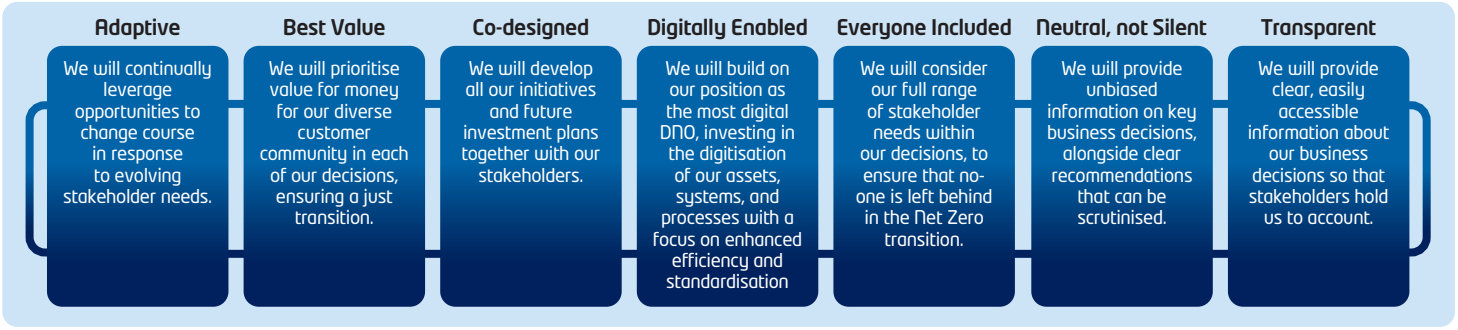


Figure 2: Our DSO Guiding Principles



Our DSO Transition Plan

Our DSO Transition Plan, initially outlined in our RIIO-ED2 Business Plan, stems from extensive engagement with our stakeholder community. It delineates our key initiatives **and roadmap toward realising our DSO Vision**, serving as a pivotal document for measuring our delivery progress, both internally and externally.

For our stakeholders, the DSO Transition Plan serves as a foundational document, enabling them to hold us accountable. We provide **regular updates through our** 'Year in Review' annual report, quarterly webinars, and conferences. Moreover, we report progress at regular intervals to our DSO Panel.

Internally, the DSO Transition Plan functions as a vital **programme management tool**. Progress is monitored and discussed at quarterly meetings and reported monthly to the Electricity North West Limited Executive Board.

Aligned with our principles of adaptability and inclusivity, we periodically review the plan with stakeholders to ensure its continued relevance. This **ongoing dialogue has led to the incorporation of five additional initiatives this year**, culminating in a comprehensive plan review scheduled for publication in the summer.

Building on Strong Foundations

Entering RIIO-ED2, we embarked from a robust foundation for driving the DSO Transition, thanks to our pioneering initiatives established in the lead-up to this regulatory year.

Our plan in numbers

44 Number of initiatives within the plan

5 Number of initiatives added this year

86 Percentage of initiatives completed or on track this year

Number of initiatives supporting objective 1 **17**

27 Number of initiatives supporting objective 2

30 Number of initiatives supporting objective 3

Number of initiatives supporting objective 4 **27**

Over the course of this year, 86% of initiatives are on track or have been delivered ahead of time. Six initiatives have been adapted or postponed in response to clear business decisions prompted by shifts in external factors or stakeholder demands. For instance, in contrast to other network areas, the adoption of Low Carbon Technologies (LCTs) in the North West has been relatively slow. Consequently, we strategically opted not to invest in flexibility preemptively to safeguard optimal value for our customers. This decision led to the postponement of several initiatives reliant on flexibility dispatch. Nonetheless, significant strides have been made in establishing the foundational systems to swiftly respond to demand fluctuations, evidenced by our regional barriers research (Case Study 4.2) and our end-to-end flexibility platform (Case Study 4.3).

An agile and customer-centric Operating Model

Throughout this year, we've refined our DSO Operating Model to achieve a dual purpose: **providing customers with value for money while enhancing transparency for internal and external stakeholders** regarding roles and responsibilities for delivering DSO outcomes across the business's directorates.

Our revamped structure now features a dedicated DSO Team, serving as the strategic hub for all DSO activities. Leveraging the comprehensive expertise of Electricity North West, this team ensures seamless co-ordination and execution of DSO initiatives.

Figure 3: Co-ordination and execution of DSO responsibilities

1.2 Operating Model and Governance

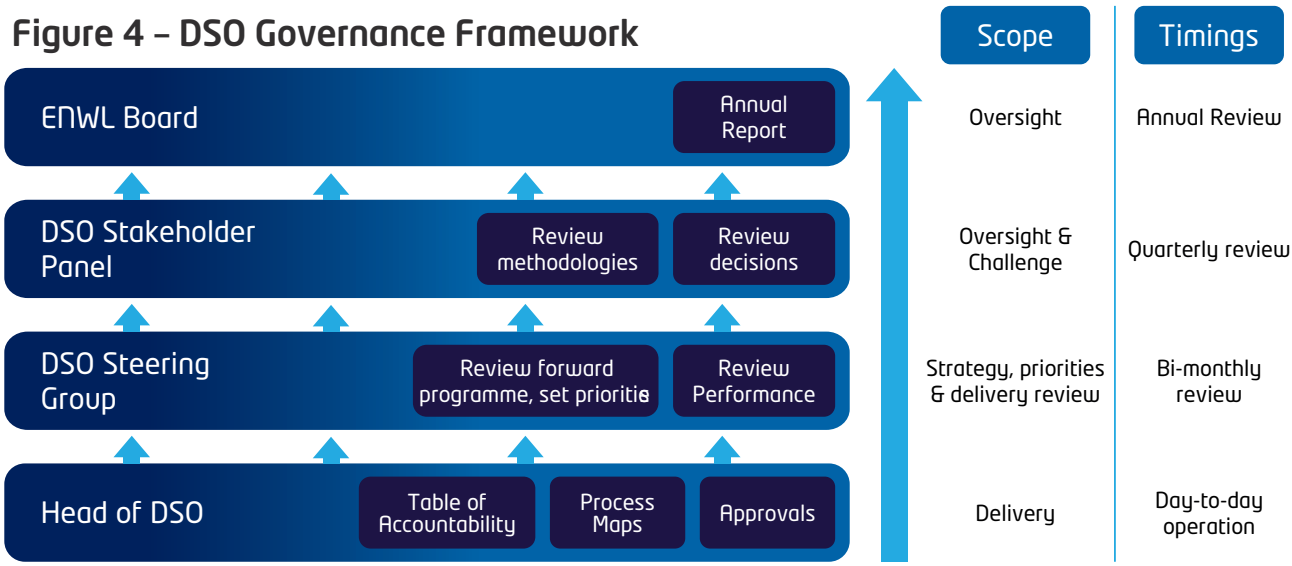
Effective Governance

We've established a robust governance structure and foundational elements to effectively oversee DSO activities throughout the organisation. This framework ensures there's adequate internal and external oversight and challenge, fostering clear feedback loops for continual learning and improvement. Key components include:

- Establishing a clear governance framework delineating the tiers of oversight and their respective roles in ensuring the successful delivery of DSO benefits (refer to Figure 4).
- Introducing a new independent DSO Stakeholder Panel tasked with overseeing decisions and methodologies, while also guiding, supporting, and evaluating DSO delivery (Case Study 5.2).
- Conducting an assurance audit to lay the groundwork for future governance, including oversight by the DSO Panel.
- Appointing a dedicated DSO Compliance Officer accountable for monitoring and reporting compliance.
- Designating a member of the Executive Leadership Team (ELT) responsible for spearheading DSO activities, with direct reporting lines to the Chief Executive Officer and the Board.

The DSO Governance Framework is illustrated in the infographic below and indicates the tiers of oversight in governance arrangements, alongside each party's scope and frequency of input.

Figure 4 – DSO Governance Framework



1.3 Stakeholder Engagement Strategy

Our strategic framework for engagement on DSO

As a company, we are committed to continuously engaging stakeholders. Our approach has developed iteratively since 2016, aiming to meet the needs of our stakeholders. It is based on the global standard for good quality engagement AA1000 Accountability Principles (updated 2018) and AA1000 Stakeholder Engagement Standard (2015).

At the close of RIIO-ED1, Ofgem's Independent Stakeholder Engagement and Consumer Vulnerability (SECV) Panel praised our engagement as, "holistic, thorough and multi-layered". Throughout 2023/24, we've relied on our integrated approach to sustain ongoing dialogue with all stakeholders, including DSO, ensuring we understand their expectations thoroughly. We recognise the importance of proving our license to operate and showing the results we deliver for customers, who fund our operations.

Our strategy involves inclusively engaging with stakeholders' priorities, adapting to our changing environment, and producing measurable results. It links to our consumer vulnerability, cyber security, data and digitalisation, innovation, and workforce resilience strategies.

Why we engage with stakeholders

DSO is of national strategic importance, and we must work with stakeholders collaboratively so that we can be sure we are making the right choice for our customers, at the right time. We engage with purpose to:

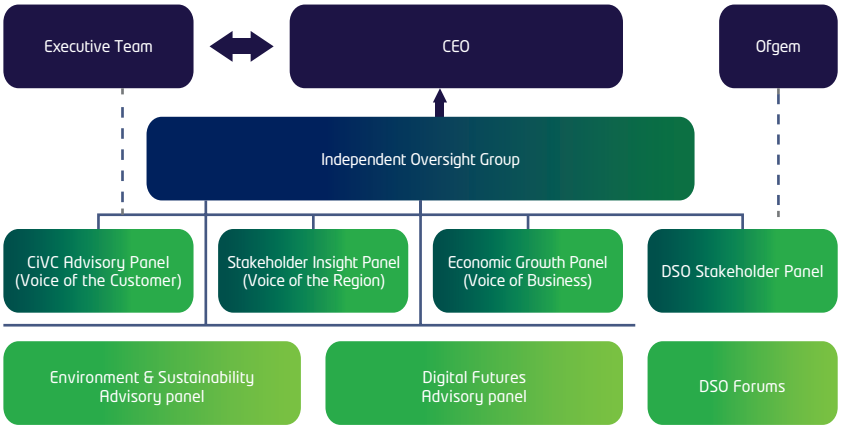
- Identify opportunities to improve services
- Co-design the design of new services and processes
- Manage uncertainty and risk
- Share learning and adopt best practices
- Deliver greater value to our customers

1.3 Stakeholder Engagement Strategy (cont.)

A holistic governance review strengthened oversight of DSO activities

To effectively engage a diverse range of stakeholders, we have **developed the existing robust advisory panel governance structure**. Advisory panels are centred around key stakeholder audiences and topics and have independent chairs. Our Panels ensure ongoing stakeholder input into our decision-making processes and implementation, and our DSO Panel is fullly integrated into this structure.

Figure 5: Our advisory panel and oversight governance structure



Andrew McIntosh, Independent Chair of DSO Panel said:

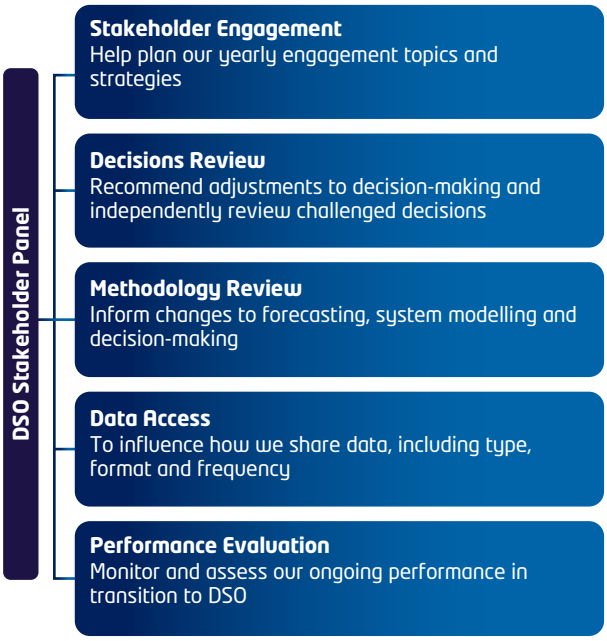
"Electricity North West has been working hard to ensure that the DSO Stakeholder Panel has visibility of a large number of aspects of the business arrangements to better serve its customers and stakeholders. It has been really positive to see this transparency, understand the benefits that have been delivered and, as a stakeholder group, have the opportunity to influence and review the future plans."

Panel biographies, terms of reference and our meeting planner are kept updated on our website.

Our aim has been to develop a framework that enables DSO stakeholders to monitor, evaluate and guide the scope and speed of our transition. To deliver the visibility and oversight required by our stakeholders **we set up an independent DSO Stakeholder Panel.** We proposed establishing the Panel in our draft RIIO-ED2 business plan and it was then replicated as best practice by other DNOs in their commitments. We carefully recruited members to guarantee diverse DSO representation. The Panel held its first meeting on 7th July, 2023, and now convenes quarterly. It includes representatives from customer groups, community organisations, and gas distribution ensuring a range of voices and viewpoints from our DSO stakeholders.

Andrew McIntosh, Director of Place for the Greater Manchester Combined Authority, is the chair of the DSO Panel, but he collaborates with the chairs of other established panels where DSO topics are also routinely discussed, via the Independent Oversight Group (IOG), ensuring sharing of knowledge and coordination of activities.

Figure 6: DSO Panel responsibilities



Understanding our stakeholders' needs

We meticulously identify and assess both existing and emerging stakeholders, categorising and mapping them based on their level of interest and influence in the company's activities. Of the 53 stakeholder groups served by our entire organisation, we identified 21 as having a high interest or influence in DSO.

This year we used 13 inclusive methods like webinars, forums, events, and one-on-one sessions to engage with stakeholders from our 21 target groups. In planning, we differentiated between **informing** channels (e.g., website, emails, social media), **consulting** channels (one-to-one meetings, events, online consultations), and **involving** channels (collaborations, DSO Panel).

This year 14 events attracted 495 DSO participants from 199 different organisations.

Illustrative events:

Bimonthly Discussion Forums: Engaging conversations, idea sharing, and relationship building

Biannual Functions Webinar: Informative sessions keeping stakeholders updated on flexible services, future electricity scenarios, and data usage

Inaugural DSO Conference: Introducing a new face-to-face DSO event, we hosted two conferences for detailed discussions on our strategy, personas, and commitments

★★★★ 92% of attendees found our plans clear and understandable

If the energy transition is to be successful, it will be essential to gather specific, place-based insights to ensure that the significance of meaningful and effective relationships embedded within place are understood and, where possible, taken into account. Through the engagement carried out, **we identified** eight DSO personas **representing our stakeholders' key priorities** and we have used these to ensure our current and future plans meet their needs.

Our eight Stakeholder Personas

- Battery Storage Operator
- Distributed Generator
- Domestic Customer
- ESO
- Flexibility Aggregator
- Industrial and Commercial Customer
- Local Authority
- Network Operator

Personas in action – a few examples of insights that have changed how we operate:

Flexibility Aggregator:
Switching from biannual to more regular tendering to provide more opportunities to aggregators who want to stack bids to increase revenue.

Distributed Generator:
Began working with ESO to coordinate product offerings in response to exclusivity clauses limiting distributed energy resources (DERs) participation in multiple markets.

Local Authority:
Held workshops with every authority in response to their appetite to develop business cases which include installing flexible energy efficient measures.

Industrial and Commercial Customer:
Formalised key account management in response to some customers consistently over-utilising or under-utilising capacity.

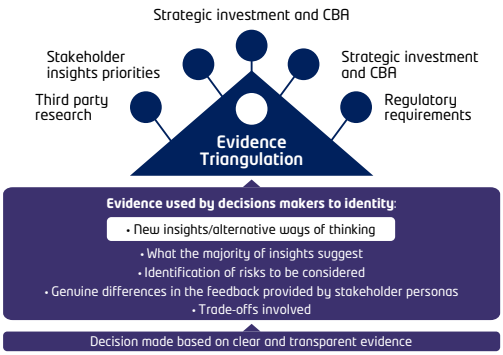
At our in-person DSO conference in April 2024, attended by 101 stakeholders, we heard that our persona-based exploration is a useful foundation upon which to deliberate complex socio-technical DSO issues that can otherwise be presented and interpreted as quite abstract and technical visions of change. Having reviewed the pen portraits of our eight personas some partcipants said that they felt they belonged to more than one persona. Stakeholders appreciated our acknowledgement that their needs are nuanced, and they helped us shape refinements including the **addition of three persona sub-groups.** For example, within Local Authorities, the needs of Elected Members are different to Climate Change Officers, Place Leaders, and Local Planners. Elected Members need a much more strategic and high-level relationship with the DNO, less technical language, and more support to understand the policy context within which that data sits. **Within each section of our submission, we delve into the impact of the initial iteration of personas on our ongoing work and how the subsequent iteration is shaping our future plans.**

Embedding engagement tracking and triangulation

We are proud to have embedded triangulation as an ongoing discipline. Triangulation, a way of interpreting and prioritising feedback, is carried out regularly and independently and is sorted, assessed, and then shared. Outputs are reviewed by our internal Stakeholder Engagement Challenge Group quarterly and our board annually, and emerging tactical insights are shared with our DNO and IOG Panel.

Tractivity, an information management system, is used by our team to update stakeholder mapping, manage updates to stakeholders' communication preferences and monitor their involvement in our programme. For example our Smart Optimisation Output (SOO) consultation was hosted within Tractivity, giving us instant access to stakeholder insights at both a persona and individual level.

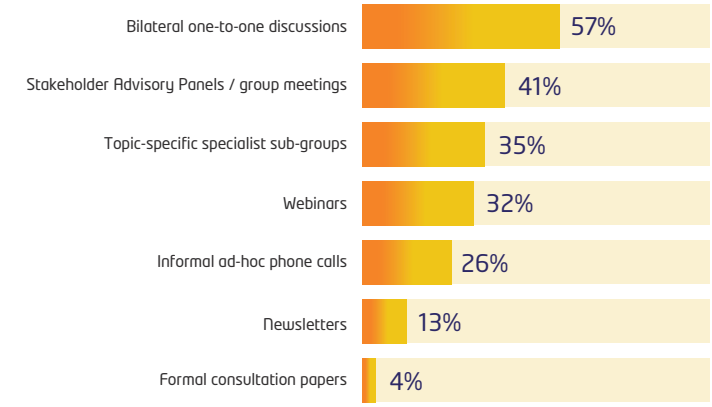
Figure 7: Triangulation of DSO insights



Our learning helps us overcome barriers to engagement on DSO

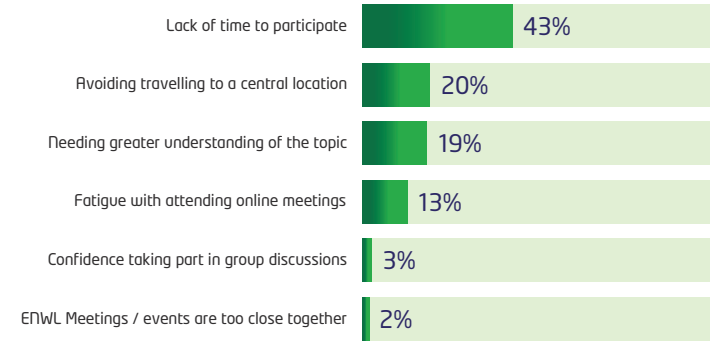
Engagement continually evolves, and our strategy, approach and tactics must embrace change so that we can move forward with agility. Our Stakeholder Satisfaction Survey (SSAT) is firmly embedded into our annual improvement plans. The key metric is how satisfied stakeholders are with their relationship with us. We share the results with stakeholders and ask for their views to inform the development and implementation of our action plans. While not all DSO personas (like customers), were included in the survey, strong participation was observed among interested DSO stakeholders.
For instance, 30 out of 35 Local Authorities took part. This year, 54% of all survey participants engaged with us on DSO topics such as grid capacity, data, flexibility, and Net Zero. Our deep-dive analysis indicates that **satisfaction among DSO stakeholders was 78%, a year-on-year improvement of 8%**. Key insights include:

Figure 8: Preferred DSO Engagement Channels



57% of DSO stakeholders told us they **prefer being consulted in one-to-ones**, up 13% year-on-year and 13% higher than the average for non-DSO stakeholders. In response the calling card of our approach this year has been to develop close one-to-one relationships with stakeholders that allow for depth of discussion.

Figure 9: Barriers to DSO engagement



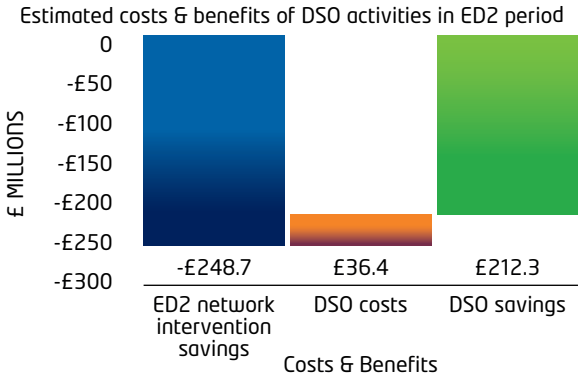
The biggest barrier to DSO stakeholders engaging with us is a **lack of time to participate**. After further exploration we agreed to simplify briefing materials, cap the duration of online meetings at two hours and move from formal consultation papers to webinars where we can provide relevant context and collect in-the-moment feedback via polling.

Benefits Realisation Strategy

Transition to a Distribution Systems Operation is a critical enabler of decarbonisation in the North West, with the ability to unlock multiple benefits both for local stakeholders and the UK as a whole. **Throughout the RIIO-ED2 period, we foresee DSO activities yielding a net benefit of between £212-216m,** excluding the gains from associated innovation technologies. This is an additional £4m projected benefits forecast since DSO Transition Plan, due to revised benefit cases for standardised flexibility products. This figure represents a conservative estimate of the benefits stemming from our DSO programme, encompassing cost savings derived from advanced Distribution Future Electricity Scenarios (DFES) modeling, low voltage (LV) monitoring enhancements, and increased flexibility, all compared to the traditional DNO model.

Additionally, **over £60 million in benefits are anticipated from related innovation projects** and smart fault level solutions. In the inaugural year of the regulatory period, our focus has been on cultivating a broader comprehension of the advantages offered by DSO, laying the groundwork for our benefits realisation strategy.

Figure 10 – Estimated total savings from DSO Activities in ED2



This year, we have tracked almost £9m of benefits, £7.5m of which was realised from our enhanced DFES modelling and a further £1.4m from LV monitoring. Many of the benefits arising from investments made this year, particularly the significant benefits associated with flexibility services, will start to be realised from 2024/25.

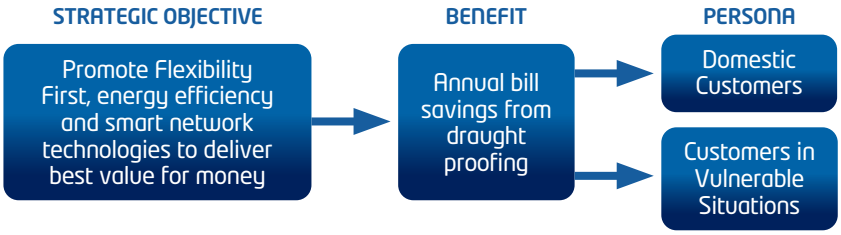
Our Benefits Realisation Methodology

Throughout this year, we've refined our methodology for monitoring the benefits derived from DSO activities and assessing their broader impact on facilitating decarbonisation within our region and beyond. Guided by feedback from our stakeholders, our approach prioritises:

- Establishing trust in the robustness and accuracy of our analysis among stakeholders.
- Facilitating comparisons of our benefit delivery performance with that of other networks.
- Understanding the full scope of benefits and beneficiaries, both within and beyond traditional DNO boundaries, is crucial for recognising the value DSO activities bring to the entire energy system.

We have developed a library of over 70 DSO benefits, which we track over RIIO-ED2, covering economic, environmental, financial, fiscal and wellbeing. Within the benefits library, each benefit has been tagged to our strategic objectives and our stakeholder personas, ensuring that there is a golden thread between our strategic framework and our stakeholder community.

Figure 11: Example benefits map



We have identified a variety of well-established tools to track benefits during RIIO-ED2, as set out in table 1, and use these to track benefits of decisions and DSO delivery.

Table 1: Current tools used for Benefits Articulation & Tracking

Analysis tool	Benefits Groups Covered	Developer
Ofgem Cost Benefit Analysis (CBA)	Environmental, financial, societal	Ofgem
Social Return on Investment (SROI)	Economic, environmental, wellbeing, fiscal, financial	ENA and Sirio Strategies
Real Options Cost Benefit Analysis (ROCBA)	Environmental, financial, societal	ENWL
Common Evaluation Methodology (CEM) Tool	Environmental, financial, societal	ENA Open Networks and Baringa
Whole System CBA	Environmental, financial, societal	ENA Open Networks and Baringa
Innovation CBA	Environmental, financial, societal	UKRI and ERM

Through the development of our strategy, dialogue with stakeholders and a review of best practice, we identified that there was a risk of different approaches being taken to benefits analysis across the industry. This could result in stakeholders being unable to reliably compare benefits realisation between networks. This follows learning from our collaborative work last year with wider industry, which culminated in clear and consistent fuel poverty SROI reporting metrics to aid comparability in 2022/23 SECV assessment.

Furthermore, we identified the need for a more holistic approach, that can better combine the approaches used by separate, decision-based tools. In response to these issues, we've established **a new collaborative project with SSEN to review our different approaches with a view to designing a framework for a more holistic and common DSO benefits approach.**

This builds on **a formal collaboration agreement** we have with SSEN that is in its second year, and sets out clear governance, with directors of both companies committing to ongoing sharing of challenges and best practice. Our shared ethos and commitment to collaboration enabled the level of openness required to start this important piece of work, which we are actively now inviting other networks to be part of (see forward look).

As a key part of our strategy, benefits tracking is incorporated into the DSO governance and oversight processes (see Section 1.2) including an annual review of DSO benefits realised, provided to our DSO Panel and all internal groups, the first of which will be published in 2024.

Forward Look

Over RIIO-ED2 networks face common and significant challenges and it is our view that the DNO community must do more to learn from each other's experiences and unlock generate benefits for customers. We will expand our collaboration with SSEN to encompass other networks, as we jointly develop a holistic and common framework for assessing and tracking DSO benefits. This initiative aims to provide stakeholders with a reliable means of comparing performance across networks, ensuring transparency, and fostering confidence in the outcomes achieved.

In the upcoming 2024/25 period, we will also advance our strategy through:

Conducting a collaborative review of the benefits of DSO in the north west region, working in partnership with stakeholders across the entire energy systems spectrum.

Delivering our first annual DSO benefits report to our esteemed DSO Panel.

2.1 Case Study - Cross Vector leadership and investment planning

Strategic Context

The Net Zero transition requires action and investment across energy vectors and the associated networks. Only through effective cross-vector planning can the transition to Net Zero be optimised to deliver value for money for customers.

▶ What we heard

We've **engaged extensively across each of the DSO personas** to understand how best to ensure our investment planning processes consider and support a whole system view. Taken together, they told us that they want:

- us to take a proactive role in supporting local ambition, sensitive to the different scales of Local Area Energy Plan (LAEP) maturity across our region
- a broader set of data inputs to better represent broader energy system interactions
- a clearer understanding of our forecasting assumptions for network planning
- the ability to compare 'like-for-like' across distribution network areas.

▶ What we did

We've taken a bespoke approach to local authority engagement and support, holding quarterly 'single-conversation' surgeries for each Local Authority. This personalised approach has allowed us to tailor our support to individual Council needs. In some cases, that's meant being a technical and strategic partner in the development of LAEPs. For example, we've supported Lancaster council in the development of their plan, which will be launched shortly. In areas that are more advanced in their LAEP journey, such as Greater Manchester, we've been an active partner in the development of actions plans for the delivery of specific LAEP projects. For example, we supported Manchester City Council in the development of their Bee Network, resulting in over 20MW of electric vehicle (EV) charging points being integrated into bus depots across the city.

We've also worked with stakeholders across the whole energy system to significantly broaden the range of data inputs to our investment planning. Our DFES and Network Development Plan (NDP) now draw on a wider range of insights, allowing our stakeholder community to take a more sophisticated real-world view of the current and future pathways. Alongside this, we've put in place the long-term collaborative processes in place to keep this data robust and current.

Table 2 highlights some of the key additional data enhancements to our data outputs that we have incorporated into our DFES process and reporting during this regulatory year:

Source	New data	Enduring process
Local Authorities	• Local planning data with emerging analysis, and LAEP pathway data	• Two-way updates incorporated into quarterly 'single conversation' bilaterals with each Local Authority
Electricity Systems Operator (ESO)	• Common definitions and high-level assumptions in Future Energy Scenarios (FES) scenario framework • Transmission connected generation data from ESO FES	• Standardised annual bidirectional data exchanges. DFES building blocks ("whole system FES building blocks") are a key input to ESO FES of granular DSO forecasts
Hydrogen value chain	• Potential location/size of electrolysers, use of hydrogen for industrial demand	• Focus on whole system planning engagement through regular (annual) sessions (not standardised yet)
Customers and developers	• Connections pipeline data for demand and generation	• Two-way interactions as the connection process informs both our network plans and customer plans (circle of engagement with stakeholders)

Additionally, we made significant investments in systems and processes aimed at enhancing our stakeholders' comprehension of our forecasting methods, including:

- Conducting regular learning sessions with Local Authorities, offering both one-on-one and group support sessions to aid in their understanding and utilisation of our data.
- Releasing an enhanced Network Development Plan (NDP) workbook, which now incorporates transmission constraints for both demand and generation. It also includes guidance for customers and stakeholders to navigate connection timelines effectively.
- Contributing to the nationwide advancement of whole systems FES by sharing our DFES building blocks with the ESO. This collaborative effort ensures that our insights contribute to the development of a comprehensive national energy strategy.

▶ What we learnt

Many of the lessons learned this year in expanding the scope of our planning efforts hold significant relevance for the emerging Regional Energy Strategic Planners (RESP). These include:

- Acknowledging that developers of Distributed Energy Resources (DER) often have high certainty regarding developments over 1-5 years. This underscores the importance of implementing reinforcement (where appropriate) in stages to avoid prematurely limiting options for longer-term developments with greater uncertainty.
- Observing a notable shift away from gas-fuelled Combined Heat and Power (CHP) plants for district heating, with several projects being cancelled. This insight will be integrated into our 2024/25 forecasting cycle, informing our strategic decisions moving forward.

Stakeholder impact

Advancements toward more sophisticated, whole-systems forecasting will yield the following benefits:

- Financial savings for customers stemming from optimised local network investments, ensuring efficient allocation of resources.
- Enhanced standardisation of forecasting practices across network areas, fostering greater planning certainty for other network operators and market participants alike.
- Increased planning certainty for Local Authorities and Local Energy Communities, empowering them to attract and efficiently deploy low carbon funding streams to drive sustainable initiatives.
- Heightened market certainty for energy systems investors, encompassing flexibility aggregators, battery storage operators, and renewable energy producers. This certainty will spur additional investment and deployment of low carbon energy technologies, accelerating the transition to a more sustainable energy landscape.

▶ What we will do next

In 2024/25, we will embed new data inputs developed into our 2024 DFES and deliver several new initiatives.

Table 3: New commitments

Feedback theme	We will..	When we will deliver
LAEPs	• Undertake a collaborative review of our support to LAEPs, chaired by Local Government	2024/25
	• Aim to expand LAEP data inputs into DFES from Local Authorities, focussing further on more granular projects supplied by lower voltages	2024/25
Data accessibility	• Launch our online Data Learning Hub, with an expanded video library explaining how to use our data	2024/25
RESP	• Design a seamless data journey that allows our DFES and NDP to inform emerging regional whole system energy plans	2024/25
Standardisation	• Support the ENA Open Networks Project's System Forecasting Technical Working Group focusing on the alignment of DFES/forecasting across all DNOs	2024/25

Introduction

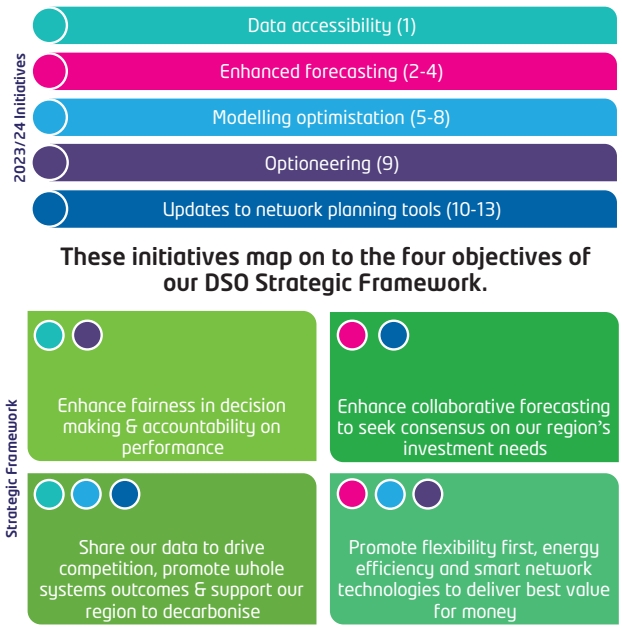
This year we've made our data more accessible than ever before, while maintaining the highest levels of data quality, meaning our stakeholders know they can trust in the data we provide. Furthermore, we've **co-designed and tailored our data journeys,** so that whether our stakeholders are accessing data for the first time or informing our whole-system forecasting, their experience is always just right. We've deep dived into our open data portal and constraint capacity maps, both of which showcase how we've created tailored data in response to stakeholder needs. And our LAEP template case study, gives a close-up view of how we've made it easier than ever for stakeholders to inform our future plans.

Taken together, these initiatives delivered this year have realised almost £8m in net benefits, and paved the way for over £200m net benefits over the course of RIIO-ED2.

Progress against plan

This year, our focus has been on implementing 13 initiatives which reflect our response to stakeholders' changing information needs.

Figure 12: Alignment to our Strategic Framework



In Table 4 we set out where initiatives are on track against plan, delayed against plan, ahead of schedule, or added since the RIIO-ED2 DSO Transition Plan.

Table 4: Progress update

Theme	Deliverable	Planned status by end of 2023/24	Status year ending 31 March 2024
Data accessibility	1. Provide a data repository, on the website, allowing access to the data in machine and human readable formats (e.g. APIs)	Delivered	On track
Enhanced forecasting	2.Enhance extra high voltage (EHV) forecasting techniques (ATLAS)	Continuous improvement	On track
	3.Develop and embed new High Voltage (HV) and Low Voltage (LV) forecasting techniques	In development	On track
	4.Install LV network monitoring equipment (PRESense) and provide stakeholders with access to granular forecasting down to the LV level	Continuous improvement	On track
Modelling optimisation	5. Begin enhanced modelling of HV and LV networks to forecast future requirements for interventions utilising new network monitoring data	Delivered	On track
	6.Create heatmaps for the HV and LV networks	Delivered	On track
	7.Signal the potential need for energy efficiency measures to be employed	Delivered	On track
	8.Assess the requirements for the use of flexible services within the HV and LV networks	Delivered	On track
Optioneering	9.Develop and integrate the processes required to identify energy efficiency programmes to defer or avoid conventional network reinforcement	Delivered	On track
Updates to network planning and operation	10.Develop the process required to produce and publish HV and LV DFES forecasts annually	Delivered	On track
	11.Upgrade or replace the existing network planning tool to facilitate enhanced forecasting and data exchange processes i.e. with Common Information Model (CIM) capabilities	In development	On track
	12.Develop the processes required to extract data from the corporate IT systems and convert this into a CIM format	Delivered	On track
	13.Develop Inter Control Room Communication Panel (ICCP) links between our control room and those of other adjacent networks	In development	On track

Throughout the delivery of these 13 initiatives, we have been guided by our strategic principles. Below are some examples of where we have been putting them into action.

Adaptive: Changing our data analytics tools to meet stakeholders' needs

Through bilateral discussions and engagement with the ESO DR Visibility Working Group, we heard that the ESO wanted our data to help them better understand local generation, while National Grid Electricity transmission sought insights into local demand and generation growth. We enhanced our Embedded Capacity Register data to include generators down to 50kW per unit, from the previous threshold of 1MW. This action expands the pool to include increased volumes of generators. Additionally, we incorporated the latest whole system FES building blocks into our DFES as part of a whole systems approach.

Digitally enabled: Leveraging PRESense technology to unlock granular LV data

In our DSO Discussion Forums, industrial and commercial customers have expressed that providing access to actual rather than predictive data gives them greater confidence in their decision-making. They have urged us to fully utilise our expanding LV monitoring programme to publish the peak demand for all sites. In response, we have made a full year of half-hourly load data available in LTDS (November 2023), encompassing 529 secondary monitored substations. To enhance understanding of network constraints, we have showcased the data, including a heatmap tool for high-level pre-connection assessments, in subsequent forums.

Challenges

Over the course of the year, we have experienced the following challenges and lessons learnt.

Initiatives 11 - 12

Insight: Our stakeholder personas showcase diverse preferences in data utilisation, with a notable group showing keen interest in **machine-readable formats,** particularly the CIM. This subset encompasses local developers, contractors, and consultants who favour tabular data formats for seamless integration into their research. Moreover, it extends to national developers and academics who leverage APIs for automated and standardised data processing, facilitating sophisticated analyses and harmonising processes across geographical boundaries.

▶ ***Actions:*** Ofgem's recent consultation on the LTDS in early 2024 has underscored the importance of providing CIM format network data, **enabling stakeholders to simulate network models in power systems analysis tools.** While our current capabilities do not include producing datasets in the CIM format, we've taken proactive steps by establishing standardised APIs within our portal, aligning with other DNOs, thereby granting stakeholders access to our data in a machine-readable format. Recognising the significance of CIM formats, we have **led the industry in the area of Grid Code Planning data exchange in CIM format.** We have raised a modification to the Grid Code (Modification GC0139) to require this and drive CIM compliance in data transfers. We've also collaborated with TNEI, our partner overseeing the IPSA planning tool, and are actively engaged in trials.

Initiatives new to plan

In addition to the planned activity, an extra inititiave has been added to the DSO Plan this year.

Table 5: new initiatives added to plan

Driver	Initiative	Delivery Milestones
Stakeholder requirement	14. Refresh the results of the network impact assessment annually and publish it in the NDP workbook with focus on regional developments	Delivered

Initiative 14

In response to feedback from stakeholders, we've refined our approach to network development plans. Recognising the **heightened interest of local authorities in capacity headroom data and regional insights** (to release maximum capacity while minimising the impact on bill payers), we've introduced annual updates of the network headroom report, encompassing both demand and generation capacity headroom data across all DFES scenarios. These updates also provide vital information on transmission constraints per grid supply point feeding area, enhancing stakeholders' understanding of regional whole system dynamics.

The rapidly evolving architecture of regulatory planning and processes

Insight: In November 2023 Ofgem announced the National Energy System Operator will be taking on a new role known as the RESP. This new body will ensure energy networks are regionally coordinated across fuel vectors and between geographies, with the right level of local input into the process as well as regional democratic oversight. RESPs will support us in delineating strategic investment needs. However, it remains uncertain how swiftly these emerging entities can familiarise themselves with their responsibilities and effectively engage with the extensive array of local energy stakeholders within their respective regions.

▶ ***Action:*** We engaged through Ofgem's Detailed Design Working Groups to consult on the new structure. To ensure whole system planning builds on best practice we contributed lessons learned from RIIO-ED2 to identify where RESPs can improve processes in preparedness for RIIO-ED3. While there is rightly an expectation for DNO input and sufficient resource commitment, a lack of clarity exists on precisely what, when and how – making our continued cooperation critical.

Forward Look

Our plans for delivery over the next 12 months include the following stakeholder-led initiatives:

Smart Optimisation Outputs

- Enhancing linkage across all data, documents and tools based on the rationale of the SOO.
- Incorporating new data from our Strategic Innovation Fund (SIF) Innovation Project: Long Duration Energy Storage for Network Optimisation, Decarbonisation and Efficiency (LDES NODE) The project will develop a methodology to inform the optimal locations of LDES technologies.

Standardisation of data sets and formats

- Sharing network data from our LTDS trial at a grid supply point area in a standardised format that will allow stakeholders to use it in a CIM.
- We will use LV monitoring data enabled by the rollout of PRESense to define flexibility service requirements across LV networks.

3.1 Case Study - Open Data Portal

Strategic Context

At the heart of our mission to empower an energy ecosystem that champions efficiency, accessibility, and customer-centricity is our commitment to advanced digitisation and data utilisation. Central to this pledge is the imperative to provide granular data access to our stakeholders, driven by dual objectives:

1 Empowering transparency in network development which is crucial for facilitating the transition to Net Zero.

2 Enabling us to support stakeholders in crafting well-informed energy strategies through data provisioning and collaboration.

To support this need we launched our Open Data Portal in January 2023.It meets the Energy Data Taskforce recommendations and Data Best Practice Guidance and enables stakeholders to access our data across four key themes in various accessible formats.

Network Data

Connections Data

Forecasting Data

Operational Data

▶ What we heard

During 2023/24 we hosted six DSO discussion forums which included data sharing as a key topic, responding to previous feedback from stakeholders that they needed more guidance on how to utilise our data sets. The response across 254 participants was positive, with requests to expand upon the use cases tailored to stakeholder personas (e.g. Domestic Customer, Flexibility Aggregator), and provide a series of short 'how-to' online videos.

We continued this conversation at our DSO Functions: DFES, Data and Flexible Services event in November 2023 and System Visualisation Interface Collaboration event in February 2024 where stakeholders told us that they want:

- a one stop shop, with everything they need easily accessible to minimise effort
- different formats of data including maps, visuals, data tables, machine readable data
- expand the range of data sets available, drawing on extensive network monitoring
- context through understanding the methodologies and processes followed to produce data
- standardisation of data sets to allow them to be merged or aggregated in meaningful ways

In addition to consultation with local stakeholders our active involvement in the ENA Open Networks Technical Working Groups related to data sharing and ESO DER Visibility Working Group, have guided our prioritisation of what data to prepare and share first as part of a whole systems approach.

▶ What we did

In response to stakeholder feedback we've considered how to adapt data and information provision to DSO Stakeholders' needs, prioritising data requested during engagement, and targeting the use cases that are going to deliver most value to them. Our actions included:

Table 6: Actions taken

Feedback theme	Action taken this year
Deepening understanding of how data is produced	• We went beyond maps and data tables to publish **methodology guides** and associated tools for DFES, NDP, DNOA, LTDS and flexibility services

Diversification of data formats available	• We ensured data can now be absorbed via CSV, and geospatial formats. **End users can fully customise** a default view of the data we provide as a starting point
	• We visualised EHV load and capacity data as maps for:
	  • 33kV capacity headroom for demand and generation across Bulk Supply Points (66 substations)
	  • 11kV and 6.6kV capacity headroom for demand and generation across primary substations (350+ substations)
	• We visualised HV load and capacity data as maps for:
	  • demand and capacity across all 11kV and 6.6kV feeder sections (over 100,000 network assets)
	  • demand and capacity across all secondary substations (over 35,000 network assets)

Expanding the range of data sets available (prioritisation informed by engagement)	• Became the first to expand Embedded Capacity Register data below 1MW and down to 50kW • Shared demand data in LTDS (November 2023 publication) from monitored secondary substations (529 substations)
One stop shop	• Combined planning (DFES, NDP, DNOA, LTDS, heatmaps) and operational (Grid Supply Point, boundary flow, outage) data, and made it all available via our data portal, to minimise stakeholder effort • Were first to publish Ofgem's Distribution Flexibility Procurement report data on the portal, including previously tendered and contracted services • Published our current flexible services requirements via the Open Data portal
Standardisation of data sets and formats	• Established APIs on the Open Data Soft platform that are standardised across multiple DNOs to facilitate machine readable format for big data access

▶ What we learnt

Emphasising the quality, not merely the quantity, of data

Our engagement has underscored the paramount importance of data quality to our stakeholders, who prioritise it over simply amassing vast quantities of datasets. They emphasised the significance of data precision to instill confidence in investment plans. It was underscored that refined, processed data is preferred over raw, unprocessed data to meet their needs effectively. A good example is the LV forecasting margin of error of up to 40-50% as widely accepted by real life trials and academic literature. **When it comes to planning, a forecasting error of such magnitude can lead to investing prematurely or failing to invest at all,** undermining the role of accurate data in decision-making.This feedback has added fuel to our ambition to deliver a just Net Zero transition, through a commitment to customer value-led innovation, responsiveness, and precision.
The enabler for this precision is the **visibility leveraged through scaling-up our network monitoring programme across lower voltages.**

Our industry-leading monitoring programme and advanced data cleansing techniques ensure that our **stakeholders have access to actual and processed, rather than predictive and raw data.**

Table 7: Industry leading network monitoring

LV monitoring metric	In-year progress	Cumulative
Proportion of customers reached (out of 2.36m customers on LV circuits)	192,178 **(8.1%)** 	1,108,833 **(47.0%)** 

A Strategic Development Programme Manager at Lancashire County Council said: said:

"ENWL's commitment to data quality, for instance, half-hourly forecasts for flexibility, while providing processed information, bolsters confidence in the inputs to our decision-making processes but also strengthens overall trust in their services."

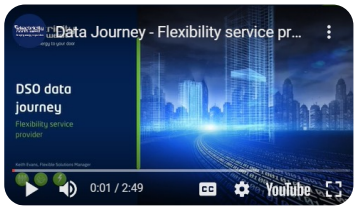
Stakeholders inform targeted improvements to data accessibility

We've learnt that stakeholders interested in, or that are impacted by our DSO services, aren't necessarily aware of DSO terminology or business models. To this end, we identified our annual Stakeholder Satisfaction Survey as a valuable opportunity to seek feedback from stakeholders who we weren't reaching through our core DSO channels. Out of the 176 stakeholders who participated, 54% had actively engaged in discussions on DSO topics throughout the year. However, only 14% of stakeholders had utilised our open data portal, suggesting a limited reach across our personas. However, encouragingly, 75% expressed a desire to learn more about it.

In our survey's hot-topic section, we discovered that a significant portion of individuals interested in the portal were either new to their job role or had limited familiarity with the data. This finding has prompted us to design and deliver **an ongoing programme featuring webinars, 'hackathon' surgeries, user stories, and videos** aimed at supporting newcomers and providing them with the necessary resources to navigate the platform effectively.
We've shared the survey feedback and open-ended comments collected on how each data set can be improved with their owners, our Digital Futures and other Advisory Panels, with feedback informing updates to our Digital Strategy Action Plan (DSAP). Our Comms Working Group are responding to raise awareness of the data available, with improved support for registered users.

We have started this process already by publishing two videos demonstrating how a flexibility service provider or a developer can leverage this data to unlock valuable insights.

Flexibility service providers



Developer (demand or generation)

▶ What we will do next

Our feedback mechanisms drive improvements, with a 'share your progress' survey on our portal for insights into stakeholder data usage. Table 8 details actions stemming from this feedback.

Table 8: New commitments

Feedback theme	We will ...	When we will deliver
Expanding the range of data sets available	Make more of our network data available through our data portal, such as maps with LCT forecasts from our DFES	July 2024, with more maps following in 2025/26
	Publish anonymised smart meter data for time-series (half-hourly probably) domestic electricity consumption	Expected September 2024, subject to data availability
Diversification of data formats available	Publish maps of electricity consumption forecasts and Distribution Generation capacity from our DFES alongside carbon reduction data	August 2024, with more maps following in 2025/26
Standardisation of data sets and formats	Share network data in a standardised format that will allow stakeholders to use it in CIM	Sample data in December 2024, followed by network wide data in 2025/26
User guidance	Co-create user stories, videos and how-to guides tailored to the needs of our stakeholder personas, while holding hackathon events to enable practical and bespoke demonstrations	User stories launched November 2024 and continuously improved
Smart Optimisation Output	Concentrate planning and operational data and information across end-to-end processes on a single web-point Open Data Portal	Expected May 2024

Stakeholder impact

The annual rise in user engagement, as illustrated in the table to the right, highlights enhanced accessibility and utilisation of our open data. **Satisfaction with the provided open data has surged to 85%**, marking a notable 13% year-on-year improvement. This underscores our commitment to tailoring data and information provision to meet the evolving needs of DSO stakeholders, including prioritising requests for additional data across all voltage levels.

Qualitative measures are also important, including the social value attributed by stakeholders to the precision of our data which is helping Local Area Energy Planners to build confidence in decarbonisation plans and influence investment decisions.

Table 9: Year-on-year growth in engagement

	Metric	Year 2022/23	Year 2023/24	% change
Data portal	Users	1,728	3,359	+94%
	Portal visits/ sessions	6,881	9,240	+34%
	Datasets	30	47	+ 57%

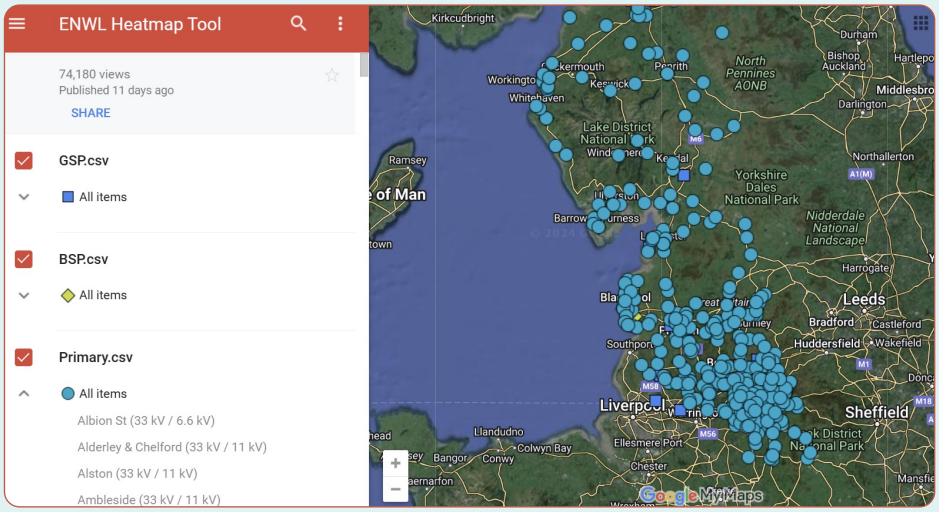
3.2 Case Study - Capacity Maps

Strategic Context

Enhancing communication regarding the available capacity on our existing network enables solution providers to **discern potential opportunities** for offering flexibility or energy-efficient services. Moreover, it fosters awareness among developers and customers regarding the availability of network capacity for the **connection of LCTs.**

As RIIO-ED1 drew to a close, we successfully published heatmaps for our 132kV, 33kV, and HV networks. In our RIIO-ED2 Business Plan, we've pledged to generate detailed forecasts and heatmaps for all voltage levels.

This includes leveraging smart meter data and insights from new LV and HV monitoring equipment installed during RIIO-ED2 for more accurate predictions.



▶ What we heard

During May 2023, 32 stakeholders attended our DSO Discussion Forum which focused on the development of our heatmap tool. This input was further reinforced by feedback from 681 stakeholders, gathered through our continuous series of discussion forums, webinars, consultations, surveys, and LAEP engagement.

Our stakeholders told us that:

- our heatmap tool could go further in clarifying longer-term capacity headroom
- we need to display capacity headroom data in our NDP using maps
- they seek visibility into available capacity data at lower voltage tiers

▶ What we did

In response to feedback from our current users and broader stakeholders, we have improved our capacity maps in three significant ways:

Table 10: Actions taken

Feedback theme	Action taken this year
Additional visualisations	• Enhanced our heatmap tool with additional visualisations from EHV to LV networks, providing insights on current and future available network capacity for demand and generation connections
Rollout of LV capacity maps	• Enhanced our LV measurements from PRESense devices to produce LV capacity maps • The devices provide over 4,000 monitoring points across 12% of secondary substations supplying 1,049,751 customers
Understanding longer-term capacity headroom	• Launched long-term forecasts for all DFES scenarios, standardised across all networks and ESO FES

▶ What we learnt

The primary stakeholder personas interested in utilising our capacity maps consist of battery storage operators, distributed generators, industrial and commercial customers and Local Authorities. They typically fall into:

a) those seeking more comprehensive data and insights to better inform their plans

b) those requiring accurate estimates of network connection requirements to facilitate their plans.

While our updated load and capacity maps have effectively addressed the needs of the first group by providing additional visualisations and insights, stakeholders in the second category are expecting more targeted information. In response we have **identified a need to prioritise automated pre-connection assessments to enhance stakeholder satisfaction.**

Table 11: New commitments

Feedback theme	We will	When we will deliver
Additional visualisations	Leverage DFES data to enhance our visualisations for LCT volumes, distributed generation, energy usage, and carbon savings	2024/25
	Integrate smart meter data into mapping and tabular representations for load and network capacity. This integration will occur once aggregated consumption data from smart meters achieves a threshold of 70% coverage among our domestic customers.	Expected 2026/27 with optimisation during 2027/28
Rollout of LV capacity maps	Enhance LV measurements and monitoring capabilities by deploying PRESense devices to a wider array of secondary substations, elevating coverage from the current 12% to 15%	2024/25

Stakeholder impact

Our capacity maps were accessed by 10,514 stakeholders and 4,215 unique users during 2023/24, providing a regional view of our needs.

- A 9% increase in stakeholder satisfaction with the heat map (benchmarked against other corporate digital services), to 79% in this year's Stakeholder Satisfaction Survey
- An increase in acceptances among quotations issued as developers used the capacity maps to research schemes and only submit viable applications

▶ What we will do next

The initiatives in Table 11 will culminate in the release of additional comprehensive data and insights, empowering stakeholders with the information they need to make informed decisions.

An Energy Manager at Bruntwood said:

"ENWL offering measurements instead of estimates at lower voltages and processed rather than raw data is a big advantage to us and other customers wanting to connect LCTs"

3.3 Case Study - LAEP Templates

Strategic Context

In the North West, there are 35 Local Authorities tasked with overseeing public services, encompassing Combined Authorities (Greater Manchester), County Councils (Lancashire), as well as District, Borough, City, or Unitary (Westmorland and Furness and Cumberland) Councils. Serving as strategic architects of our communities, Local Authorities wield significant influence in shaping the climate action. A growing number of them have already developed or are in the process of creating LAEPs, which serve as invaluable resources for our network planning and forecasting efforts. Harnessing the insights gleaned from LAEP data empowers us to optimise resource allocation, ensuring we can deploy capacity precisely where and when it's most needed.

▶ What we heard

Through our Stakeholder Satisfaction Survey (which featured representation from 30 Local Authorities), we discerned that stakeholders want personalised one-on-one assistance and input from our experts to aid them in fulfilling critical aspects of their roles.

▶ What we learnt

Through our individualised and 'hyper-local' engagement we learnt that:

- A mixed approach needs to be taken to data inputs; with some Local Authorities preferring a clear template and others a set of data validation rules
- One-to-one engagement is needed on an ongoing basis, both to increase local confidence and capability to input data, and to provide an extra layer of data assurance.

▶ What we did

We engaged in individual one-on-one sessions with each of our Local Authorities to gain insight into how we could effectively support the development and implementation of LAEPs. Through these discussions, it became evident that they seek a straightforward and transparent pathway to inform both our DFES and the DFES-driven Network Development Plan.

With our council stakeholders we co-designed a series of easy-to-use LEAP templates through which they can provide data about the planned deployment of different LCTs.

The templates have been designed in two layers, to reflect where Local Authorities are on their LAEP journey:

1. **a high-level ambition template,** for Local Authorities at earlier stages of their planning journey, which enables them to communicate the high-level technical parameters of investment programmes within their LAEPs
2. **a detailed template,** that enables Local Authorities to provide detailed deployment data for each technology (incl. EVs, heat pumps, district heat networks energy efficiency measures and renewable generation).

We collaborated with stakeholders on an overarching Data Guidance Framework, to ensure the veracity and standardisation of data, including assurance on the certainty of the investments.

Throughout the current year, 29 of our Local Authorities (constituting over two thirds of the total) have contributed data crucial for shaping our 2024 DFES.

▶ What we will do next

We have identified a number of important forward-looking initiatives to deliver over the next year:

Table 12: New commitments

Feedback theme	We will ...	When we will deliver
Building a richer picture	Build on large-scale investment programmes undertaken this year by co-designing the processes to collate data below primary substations.	2024/25
Process refinement	Work with Local Authorities to further refine the templates and guidance, with the aim of increasing take-up across region to 35 (100% of Local Authorities)	2024/25

Stakeholder impact

Improved engagement and consistency of data from Local Area Energy Plans benefits our stakeholders by:

- Allowing for timely investment in flexibility or network reinforcement, reducing the time for connections for new LCTs
- Savings in customer bills, by enabling strategic decisions that optimise cost efficient network investment.

Flexibility and Market Development

4

Introduction

This year we've seen lower than anticipated demand for LCTs in our region, so we've taken a targeted approach to **understanding and overcoming the barriers to uptake** and making flexibility in the North West accessible and seamless experience for all market participants. In this section, we'll focus on the **collaborative work we've co-led with Northern Powergrid** to address regional disparities, that will unlock critical innovation required for a just transition.

We'll also shine a light on our iterative work with stakeholders to create the right market conditions, from our **flexibility services improvement programme** to the industry's **first ever competitively tendered end-to-end flexibility platform.** Our work to develop the detailed business cases for each of our flex initiatives has identified around **£20m net benefit** from our 'dynamic' and 'restore' flexibility services, all enabled by the progress made this year.

Figure 13: Alignment to our Strategic Framework

Progress against plan

This year, our focus has been on implementing 13 initiatives which showcase significant progress in market development.

Throughout the delivery of these initiatives, we have been guided by our strategic principles. Below are some examples of where we have been putting them into action.

Adaptive: systematically removing barriers to participation through engagement

We have been procuring flexibility since 2018, with 13 tenders to date. Through our engagement programme stakeholders have voiced a clear consensus: standardised flexibility products, contracts, and processes are imperative. Through our unwavering commitment to implementing the deliverables of the Open Network Project, we have empowered local flexibility providers to readily identify the services they are best equipped to offer, facilitated by a more streamlined array of products. Our dynamic and responsive consulting approach, coupled with our adeptness in effecting change, has dismantled various entry barriers. For instance, we've **broadened our acceptance of alternative metering options in tenders,** including half-hourly metering—a capability offered by 75% of providers—where minute-by-minute metering, available from only 25% of providers, is unfeasible.

Best value: An innovative trading platform to expand market access and stacking

This year has seen significant milestones, including our pioneering role in facilitating market access. We've taken the lead by launching **the first competitive tender for a flexible services platform with comprehensive end-to-end capabilities.** By doing so, we've steered clear of proprietary systems and are actively working to eliminate barriers to entry. ElectronConnect, our new solution, enables this by streamlining the process of participating in flexibility markets, **whilst increasing the number and frequency of opportunities available.** In addition, a brand-new collaboration between ElectronConnect and Piclo Max will allow assets or providers to view opportunities and complete registration across all participating marketplaces

Co-designed: Improving understanding of the costs and benefits of flexible energy efficiency measures

To foster inclusion among this underreached group we've held workshops with every Local Authority, with many indicating their interest in leveraging our engagement to develop business cases which include installing flexible energy efficiency measures.

Our learning this year is that Local Authorities have significant energy efficiency retrofit schemes that they have in the pipelines, however, lead times for implementation are long. In addition, many are unsure how to calculate a baseline that can be used when procuring flexible services provided from properties that are installing energy efficiency measures.

Our project RetroMeter, funded by SIF, is the **UK's first Metered Energy Savings demonstrator project.** It's testing baselining methods and verifying savings in a live retrofit scheme in Manchester, focusing on heating energy efficiency. We started delivery in April 2023 with partners Energy Systems Catapult, Energypro Ltd, Carbon Co-op, and Manchester City Council. We plan to use the lessons learned from this project in our **ongoing engagement and energy efficiency support** services with Local Authorities and other stakeholders.

Everyone included: Collaboration to identify and overcome regional barriers

As efforts unfold to tackle pervasive flexibility barriers across regions in Great Britain, our proactive engagement has involved **close collaboration with Northern Powergrid (NPg).** Together, we've meticulously identified region-specific commercial, socio-economic, and technical obstacles. In response, we're pleased to announce the development of plans that focus on **harnessing the potential of low-risk markets in northern regions through small-scale, time-limited trial.**

Here we set out where initiatives are on track against plan, delayed against plan, ahead of schedule, or added since the RIIO-ED2 DSO Transition Plan.

Table 13: Progress update

Theme	Deliverable	Planned status by end of 2023/24	Status year ending 31 March 2024
Best practice governance	1. Embed flexible services products and contracts into electricity network codes	Delivered	On track
Developing the market for flexibility Services	2. Remove materiality threshold (200kVA) for flexible services procurement	Delivered	On track
	3. Introduce a pseudo-DAG process for sign off of procured solutions	Delivered	On track
	4. Develop the processes required to publish DFS statement annually	Delivered	On track
	5. Procure short term flexibility for both planned and unplanned outages	In development	Delayed
	6. Procure flexibility for connections driven reinforcement	Delivered	Delayed
	7. Transition to the short-term forecasting for the procurement of dispatch flexible services	In development	On track
	8. Develop the processes required to procure flexible services close to real-time	In development	Ahead of plan – due by Autumn-24
	9. Procure a platform-based marketplace	Delivered	On track
Expanding and embedding standardisation	10. Work with other system and network licensees to standardise flexible services products and agreements	Continuous improvement	On track
	11. Enhance and adopt standardised flexible services contracts into business as usual	Continuous improvement	On track
Facilitating secondary trading	12. Define and publish market parameters within which parties can trade	In development	On track
	13.Develop/integrate a secure marketplace platform for secondary trading	In development	On track

There have been a couple of adjustments against our original plans where stakeholder insights and/or careful management of opportunities or risks have driven change.

- **Initiative 5:** We haven't had any need to procure short-term flexibility for planned outages but will actively review our requirements and look for opportunities in 2024/25.
- **Initiative 6:** We have only had a limited number of flexible connections issued under the access SCR new rule none of which necessitated flexibility.

Challenges:

Developing the market for Flexibility Services

We plan to progress to monthly tendering for our autumn 2024 tender, especially for services like restoration that can be smoothly integrated. Our detailed forecasts provide the crucial information for this transition. However, until our Active Network Management (ANM) system is fully installed we will not have complete control over all required elements.

Expanding and embedding standardisation

As part of the ENA Open Networks Project, our main goal is to enhance the standardisation of flexibility product definitions. This helps providers easily identify the services they're best suited to offer from a more streamlined selection of products.

Within 2024, we aim for at least 80% of flexibility to be tendered through common products.

However, some providers hesitate to sign the common contract due to specific clauses. Negotiating bespoke terms with other networks complicates our efforts to uphold standardised contracts.

While we prefer a common contract for its benefits like stacking and reducing legal burdens on smaller participants, it can inadvertently become a barrier to entry. **We strive for a fair balance, upholding standardisation 80% of the time but allowing flexibility for remaining clauses as needed.** This approach maintains consistency while accommodating unique circumstances.

Forward Look

Facilitating secondary trading

We have been developing our ANM system with a clear **vision of establishing the most digitised DSO management system.** Our efforts this year have extended to establishing a market for secondary trading and curtailment obligations, spearheaded by the Network Innovation Competition (NIC) funded BiTraDER project.

This initiative explores options for introducing a **live peer-to-peer** trading platform, enabling large, connected customers to trade their position in the merit order stack. This determines the sequence in which they are asked to curtail output during periods of high network demand. The project leverages the short-term forecasting module within ANM, a core component facilitating providers to assess their curtailment risk and engage in trading with other DERs to mitigate it. Affirming our neutral but not silent principle by **enabling independent pricing of the market** and curtailment will unlock additional revenue streams for providers and enhance market liquidity.

The initial beneficiaries when these projects transition to Business as Usual (BaU) will be DER owners.

Technical specifications for the trading platform and interfaces with our NMS and ANM have been developed this year, alongside commercial trading rules for trial in simulated and live network environments. **Small-scale trials with DER operators were conducted in 2023/24,** with the feedback received on preferred trading models informing through design of further simulated trials planned for 2024/25 and full trials in 2025/26.

We're extending the BiTraDER project timeline to allow for comprehensive testing and stakeholder involvement. Feedback has led to **improvements in the methodology and display of information,** emphasising simpler trade matching methods. We've also included stakeholder preferences for availability and utilisation payments in trading mechanisms, despite making things a bit more complex.

We are sharing the iterative learning emerging from BiTraDER with network and system operators in the UK and internationally, who see potential uses for their markets.

Developing the market for Flexibility Services

In 2024/25, we're fully dedicated to supporting the acceleration of these projects:

- Continuing to work hard to unlock the value of flexibility and energy efficiency in more nascent areas, incorporating **LV requirements into our Autumn 2024 tender.**
- Based on stakeholder feedback from 2023 asking for shorter procurement times, we'll work on increasing how often we **issue tenders to get closer to real-time procurement.**
- We'll make operational data more available and accessible to the GB System Operator and other DNOs by **ICCP link.**
- Our DSO team will work closely with our strategic planning and connections teams to **speed up connections queued** for transmission network reinforcement.

4.1 Case Study - Flexibility Services Consultation and Improvement

Strategic Context

Our RIIO-ED2 commitment is to enhance market opportunities and foster an environment where providers can maximise the value of their flexibility. Our focus is on **prioritising flexibility to ensure efficient use of network capacity at the best price,** thereby building trust as a neutral market facilitator.

▶ What we heard

Following the publication of our Procurement Statement in March 2023 setting out our plans for the upcoming year, we launched our Flexibility Services Consultation in July 2023 to shape our priorities and improvement plans. We received 19 responses including from local aggregators, generator developers, suppliers, consultants, and community energy groups. These were supplemented with feedback through webinars, emails, and one-on-one discussions. Stakeholders expressed that they lack time to go through detailed documents on our website, so we emphasised providing **clear guidance and simple methods for feedback,** like interactive polling in our popular webinars.

Stakeholders told us they wanted to see:

- Commitment towards industry standardisation of products, API interfaces, and platforms while reducing differences in processes, technical requirements, and contracts
- Decreasing minimum thresholds to enable smaller players to participate
- Availability of both short- and long-term contracts
- Openness to revising long-term agreements if circumstances change
- Awareness raising of energy efficiency measures as a standalone product, clarifying the technical parameters of this service and how successful delivery is measured.
- Working to reduce entry barriers like minute-by-minute metering, penalties risk, wider location requirements and revenue uncertainty.

▶ What we did

The table below reflects the changes we've made to our approach at pace in response to our stakeholders' feedback:

Table 14: Actions taken

Feedback theme	Action taken	Pace of change
Commitment to standardisation	• We utilised the Standard Flexibility Agreement created collaboratively with DNOs, ESO and stakeholders and will adopt updated versions	We adopted V2.1 in our Autumn 2023 tender, with V3 due to be implemented by Summer 2024
	• We introduced a framework approach (as part of Standard Agreement V3) to enable shorter term procurement	Consultation complete
	• We consulted stakeholders to ensure a smooth migration to the Standard Agreement	
	• We kept collaborating with the industry to create a shared API interface	Expected Summer 2024
	• We removed our annual commercial qualification requirement on Piclo	Implemented in our Autumn 2023 tender
Lowering minimum thresholds	• We lowered our threshold to 10kW. Initially, it was 200kW, then 100kW, then 50 kW, and now 10 kW	Implemented in our Autumn 2023 tender
Accommodating changes	• We will allow providers to update their capacity or bid price annually if/when circumstances change	Due to be implemented in V3 by Summer 2024
Removing barriers to entry	• We now accept alternative metering options in our tenders, like half-hourly metering, which 75% of providers can offer, when minute-by-minute metering, available from only 25% of providers, is not possible	Implemented in our Autumn 2023 tender
Stand alone energy efficiency product	• We adopted a new dedicated energy efficiency product called Peak Demand Reduction, as defined by the ENA Open Network's Project product workstream	Launched on 15th April 2024 in our Spring Tender. We are the first DNO to implement it.

▶ Addressing the more nuanced needs of our stakeholder personas

While we've demonstrated our openness to continuously reviewing our minimum participation threshold, we've learnt that this may not benefit everyone. We've discovered that the goals of our **Flexibility Aggregator persona** are such that the revenue potential below 10 kW is unlikely to motivate them. We are responding to this by creating an environment for stacking flexible opportunities across markets, as demonstrated in our case studies 4.2 regional barriers research and 4.3 end-to-end flexibility platform.

Our engagement revealed a lack of awareness of flexibility services among our **Industrial and Commercial Customer segment,** along with a notable absence of trust in LCTs and the energy sector within rural and farming communities (where we have more requirements). To tackle this, we've become more proactive and personalised in our approach. Firstly, we **customised our engagement in rural communities** by organising drop-in sessions at local village and town halls, as well as agricultural shows. During these sessions, we understood their unique needs and concerns, demystify DSO and tailored our support. Secondly, we **targeted potential new providers in our constraint zones who aren't yet aware of flexibility services.**

Through research, we found the top 30 companies with the most assets and import capacity in constraint zones. We've offered **personalised meetings and site visits to discuss revenue potential** with them. These include farms, gyms, local authorities, NHS sites, supermarkets, telecoms sites, universities, and water company depots. We've had 18 meetings so far.

Examples of organisations engaged:

Although it's tough to find contact details for the right stakeholders, these discussions have been productive, especially with those identified through our operational data who are already overusing their maximum capacity.

Through almost 500 interviews with businesses and landlords over the past year, we've discovered that businesses will engage in flexibility and decarbonisation, but only if information is delivered via a trusted voice and tailored to them. Through our strategic partnerships with Cumbria County Council, East Lancashire Chamber of Commerce and Greater Manchester Bee Net Zero we've signposted support to 1,738 customers, helping them integrate their projects to the grid, explained technologies and options, while signposting to grants and installers.

To help Climate Change Officers in our **local authority's persona,** some of whom may not be familiar with the concept of DSO, in enhancing collaboration with their elected member counterparts and strengthening the strategic partnership with the local council and DNO, we've ensured that officers can easily access clear information about our tenders. We published two new documents on our website:

1. Commercial Qualification Criteria document - includes example answers using a fictitious company, along with pass/fail criteria for evaluation.
2. Procurement Process Flow Chart - provides a clear overview of the entire process, from forecasting requirements to signing contracts.

4.2 Case Study - Regional barriers research

▶ What we learnt

We held another cross-industry event alongside Piclo, UKPN, SPEN and NPg in May 2023. Among the 71 attendees, a majority welcomed the move to standardisation in contracts, but new entrants cited concerns that some providers were negotiating bespoke terms.

During flexibility product discussions in ENA Open Networks Technical Working Groups, significant deviations from the agreed-upon standard four products were identified. These deviations primarily stemmed from differences in network topologies, stakeholder preferences, technical capabilities, and interpretations of product definitions. In response, we **collaborated with other DNOs to establish a unified set of products and implemented them in April 2024.**

Stakeholder impact

Inclusive engagement delivered significant year-on-year growth in local flexibility assets registered for future opportunities and providers completing prequalification for tenders.

Table 15: Growth in registered and prequalified assets

Participation metric	2022/23	2023/24	YoY
Assets registered	3,390	21,514	+534%
Providers commercially qualified	7	15	+114%
Tendered in reporting year (MW)	1025	1097	+7%
Accepted bids (in-year)	28	81	+189%
Accepted bids* for delivery (MW)	2.478	21.718	+778%

*Subject to contract

More widely, 75% of businesses receiving our Net Zero wrap around support via trusted partners agreed that the support received had been tailored to their individual needs. 35% had, within 12 months, accessed £0.7m financial benefits by adopting energy efficiency and technologies.

▶ What we will do next

We will deliver new initiatives to reduce barriers to entry:

Table 16: New commitments

Feedback theme	We will ...	When we will deliver
Reduce barriers to entry	Introduce monthly flexibility tenders, procuring flexibility for shorter term dispatch opportunities	By April 2025
	Publication of LV requirements, where we will offer granular half hourly profiles for LV opportunities	By April 2025

We'll use PRESense, our network monitoring technology, to drive these initiatives. It'll also let us offer better prices for flexibility thanks to more accurate data and forecasts.

Strategic Context

Since 2018, procurement data for SLC 31E has highlighted a concerning **disparity in the contracting of flexibility services among DNO regions,** with a pronounced gap observed between the North West and North East regions compared to their counterparts in the southern and midlands areas. Despite concerted efforts to cultivate flexibility markets through various means such as tendering processes, relaxation of requirements, stakeholder consultations, adoption of standardised evaluation methodologies, integration of innovative insights, and a steadfast commitment to ENA Open Networks, these regional discrepancies persist.

While initiatives are underway to address common barriers across regions, such as the presence of non-standard products, fragmented procurement procedures, and the misalignment between local and ESO markets, there had been no comprehensive assessment to **identify whether region-specific obstacles exist, and if so, what measures are necessary to overcome them** to ensure equitable performance across Great Britain.

▶ What we heard

We took proactive steps to engage with Northern Powergrid, sharing valuable data and insights gained from our experiences. Through this collaboration, we identified a common challenge: **the prevalence of requirements in predominantly rural areas characterised by low customer numbers.** Feedback we received from aggregators across the market indicated a key factor in prioritising southern markets instead of northern is that reinforcement costs and thus ceiling price for flexibility are higher in urban areas.

Our triangulation of stakeholder feedback led to a working hypothesis suggesting that the disparities in uptake we've observed may stem from geographical barriers, while acknowledging the potential influence of other socio-economic, technical, and commercial factors (see below).

Figure 14: Pan-northern bias in Autumn 2023 tender zones

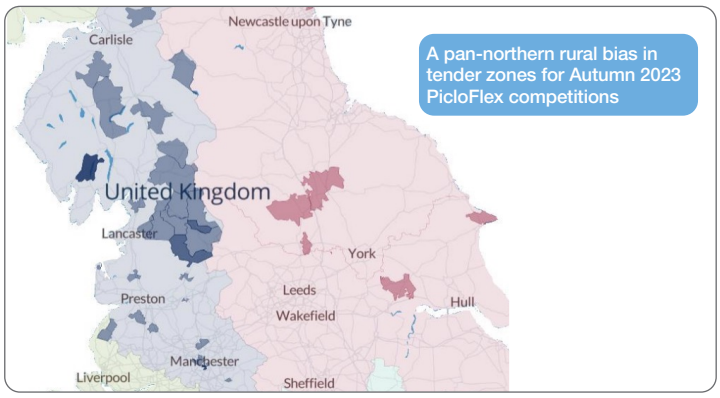
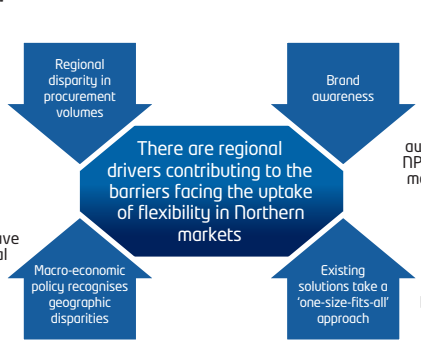


Figure 15: Disparities in Northern markets



Procurement Volumes

Despite a growing number of tenders, Northern DNOs still have limited success procuring flexibility to manage constraints

Government policy

Current government policy notes that 'cumulative forces have widened geographical disparities in the UK over time. Without policy action, they will continue to do so."[1]

Brand awareness

Flexibility service providers (FSPs) participate more heavily in regions that have an established brand awareness. ENWL and NPg are not the 'go-to' markets for flexibility.

Homogeneous solutions

Current in-flight solutions are designed for barriers to flexibility that are regionally homogenous

▶ What we did

We partnered with Northern Powergrid to jointly commission and co-fund an investigation into region-specific barriers to flexibility services. WSP was engaged thorough desk research and analysis, supplemented by an engagement programme with stakeholders. Flexibility stakeholders, including platform providers, Department for Energy Security and Net Zero (DESNZ), and networks, provided feedback on their experiences, allowing the findings from the desk research and analysis to be rigorously tested and validated.

Figure 16: Collaborative research process

▶ What we learnt

Stakeholders broadly agreed that they had either experienced, observed, or heard of regional disparities in flexibility uptake and the potential barriers causing these, including several factors identified in the analysis: industrial decline changing demand, early innovation funding enabling first-mover advantage in southern markets, and a lack of assets in rural areas.

A representative of the Association for Decentralised Energy said:

"A business with limited resources determining where to dedicate those resources could go into a market where they are buying 500 units of a product versus 10 units of a product. It just makes more business sense for providers to go where there is more availability,"

WSP's analysis validated more headroom violations and associated products and dispatch likelihood in regions such as the south, increasing the potential earnings for providers. Stakeholders cited examples of **commercial, socio-economic, and technical barriers** which they felt were **more prevalent in the north** and these were validated through independent data analysis:

- **Commercial drivers:** Lower dispatch likelihoods in ENWL and NPg regions influence potential providers earnings, making other markets more attractive for business development.
- **Socioeconomic drivers:** A noticeable discrepancy in the prevalence of plug-in EVs per 100,000 across regions, which may widen due to the socioeconomic composition of northern /rural regions (below average household income).
- **Technical drivers:** A significant shortage of Charge Point Operators available to both aggregators and individual tenders, with fewer than 15% of public chargers located in northern regions, despite these areas serving approximately 22% of customers (ZapMap UK).

Stakeholders cited the ability to stack revenues between markets and products as integral in developing flexibility markets, particularly those that have been smaller to date. **Ultimately, stakeholders agreed that action to develop flexibility markets in those regions that are currently lagging would be very welcome.**

▶ What we will do next

Given our projections, we anticipate that primacy issues on our network won't arise for several years. Consequently, our strategy involves facilitating stacking to incentivise participation. This approach, we believe, can play a pivotal role in **bridging the innovation gap** that has emerged between the north and south. To mitigate clear regional variation that risks becoming embedded in flexibility markets we will utilise the low-risk markets in the northern regions for **small scale, time limited trials for the implementation of central market facilitation measures** via a DNO forum led in tandem by ENWL and NPg.

Our collaborative network forum will include representation from the ESO, market facilitator delivery body, Ofgem, and DESNZ. It will have oversight of **repeated cycles of building, field testing, and iterating,** with learnings from each stage adopted into the next.

During a bilateral meeting in December 2023, Ofgem expressed support for the foundational principles underpinning our proposed implementation trials. Subsequently, in January 2024, we provided detailed insights into the scope and primary regulations governing these trials. which we expect to commence in 2024.

Stakeholder impact

We are delighted that the inaugural Utility Week Flex Awards, showcasing innovation and best practice, shortlisted our collaborative research project for 'best use of energy flexibility data'. Moving beyond theoretical designs and blueprints to testing specific plans and 'learning by doing' will deliver critical insight to the Market Facilitator which will go live in late 2025 or early 2026. Benefits will include:

- Generating interest and opportunity awareness for markets that are lagging in participation
- Highlighting implementation issues in a contained, low-risk environment
- Reducing the risk of duplicative work at the central market facilitation blueprint phase, avoiding wasted resources or stranded investments
- Reducing frictions and inefficiencies at the first implementation of the Market Facilitator in 2025/26
- Inform aspects of regional planning and central market facilitation that require regional approaches.

Collaboration is the only way to achieve the desired outcomes. We are pleased to be leading on this piece with NPg and will continue to publish our research and insights on our website and disseminate via events. We look forward to feeding these findings into the newly establish RESP functionalities, to highlight synergies in regional planning methodologies, and continuing to promote a flexibility first attitude in the North of England through this collaborative approach with NPg and local stakeholders.

4.3 Case Study - End to end flexibility platform

Strategic Context

Ofgem has firmly established the expectation that DNOs refrain from developing proprietary flexibility systems. In alignment with our RIIO-ED2 Business Plan commitments, we have pledged to regularly solicit bids for platform services. This approach aims to enhance competition through innovation, drive cost-effectiveness for customers, bolster market liquidity, and facilitate entry for new providers.

▶ What we heard

In one-to-ones, flexibility providers told us that our network, boasting some of the most economical reinforcement costs, is influencing their decision to prioritise engaging in southern markets to maximise revenue. This underscores the critical importance of data sharing, digital infrastructure, and stackability to enable greater participation. In particular, smaller providers asked for the use of one market platform to participate in all DNO, DSO and ESO tenders.

Our quarterly insight triangulation reports consistently highlight the significance of accessibility for platform users, emphasising its pivotal role in shaping future service designs.

▶ What we did

We set out to look for platforms that can be seamlessly integrated with our NMS and ANM systems, harnessing their full capabilities to provide benefits to customers both now and in the future.

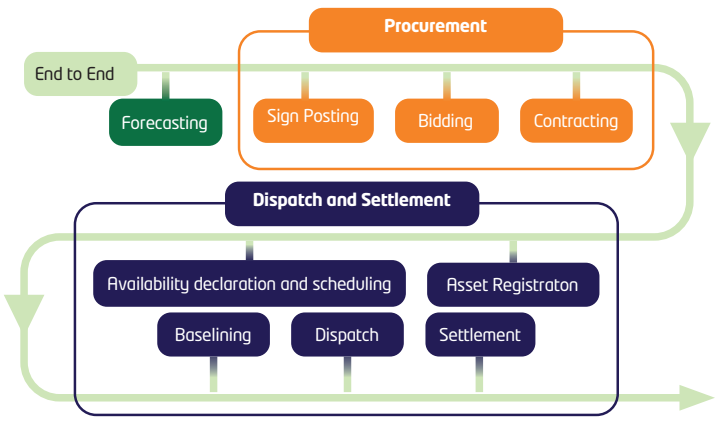
This year, we achieved a significant milestone by becoming the first DNO to initiate a competitive tender for a flexible services platform with end-to-end capabilities, **thereby deploying a technology platform that makes it easier for flexibility providers to access our markets.** We invited innovators to propose modular, consortium, or complete end-to-end solutions.

The aim of the tender was twofold: to foster market competition and to guarantee cost-effectiveness for our customers regarding these services. The tender's scope and technical specifications incorporated accessibility criteria to uphold stringent standards.

We received 12 expressions of interest, out of which 8 final bids were submitted from 6 providers. Among these, 4 were shortlisted and progressed through the comprehensive technical interview process.

Our approach was open to selecting multiple platform providers, allowing, for instance, one provider for procurement stages, and another for dispatch and settlement processes.

Figure 17: Capabilities required in the end-to-end platform



As part of the process we shared the questions and responses with other DNOs and Ofgem to help inform their Call for Input: The Future of Distributed Flexibility. The output of the exercise was two innovative strategic partnerships:

1. A two-year collaboration with technology provider Electron

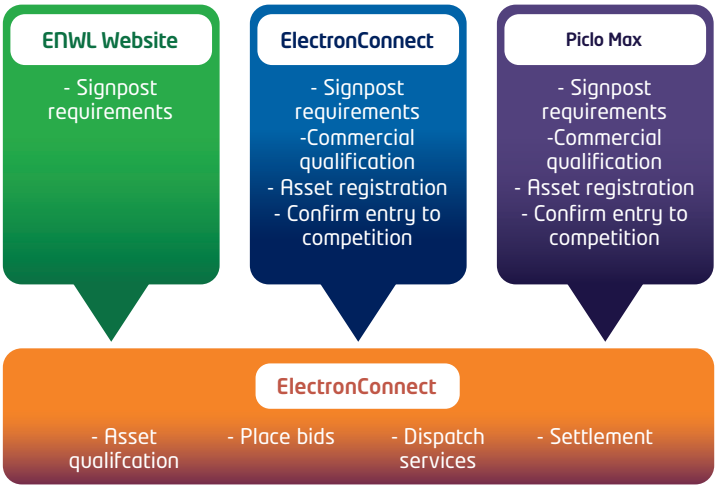
Electron (the provider) offered the best technical solution (ElectronConnect) and a one-stop-shop for customers. It will configure different market products and procure flexibility from different technology types and network levels - and across different time scales, for example day-ahead to year-ahead. Insights derived from data will enable providers to enhance their forecasting of flexibility availability, thereby **optimising profitability and capitalising on stacking opportunities.**

ElectronConnect's distinctive integration with our network monitoring and control systems facilitates a live topology model. In real-time, our ANM system determines the optimal solution to address issues. Moreover, it can amalgamate Flexible Services, Flexible Connections, and Flexible Assets into a single dispatch. It is this amalgamation which generates benefit and offers a forward-thinking approach compared to the conditional logic prevalent in other solutions.

2. A collaboration agreement between Piclo Max and ElectronConnect platforms

Our strategy involves Electron being our main market platform for tendering and trading flexibility. Additionally, providers can access all electricity markets within a **single user-friendly interface,** essentially 'filtering' providers to each of the flexibility platforms. This feature will reduce barriers to entry. Piclo Max will act as an extra channel, allowing assets or providers to view opportunities and complete registration information across all participating marketplaces, expanding our reach and easing the process for providers. This will be done seamlessly through APIs between the platforms, reducing disruption to the providers, and all parties are committed to collaborating to achieve our common goal of maximising market liquidity. **We offered one-to-ones to all providers to help integrate them within the ElectronConnect platform and support as part of the bidding process ahead of April 2024.**

Figure 18: Maximising routes to participation



ElectronConnect is also responsible for our BiTraDER platform, enabling flexible connection customers to trade their curtailment obligations. **This arrangement mitigates potential conflicts of interest, as we delegate these tasks to Electron and utilise our merit order stack to establish the list.** This solidifies our role as a Neutral Market Facilitator.

Flexibility and Market Development

4

▶ What we learnt

We shared the details of our tender with all the other networks and Ofgem for transparency. Some providers fed back that it was very technical with 'preferable' requirements focusing on the engagement aspects, but the 'should' or mandatory aspects reflecting a future-ready system that capitalises on the most digitalised NMS. Many bidders were not able to meet the pass criteria for the mandatory technical requirements but were still able to bid for other modules.

Active participation in the ENA Open Networks Primacy Working Group has played a pivotal role in facilitating **collaboration with the ESO regarding coordinated Distributed Flexibility Services, aimed at developing a stacked service offering for our customers.** Through planning a joint procurement initiative in 2024/25, we are working towards integrating our requirements. Additionally, efforts are underway to establish an ICCP link and APIs for our Open Data Portal, enabling seamless coordination between the two entities.

This collaboration allows for mutual visibility of networks, ensuring that actions taken are informed by their impact on both parties.

▶ What we will do next

Table 17: New commitments

Feedback theme	We will ...	When we will deliver
Competitive tender	Regularly retender for market platform services	Every two years

We will continue to integrate the market platform as a separate window rather than being completely built into our NMS.

A stakeholder representative at Octopus Energy Limited said:

"This collaboration is a positive step towards providing flex sellers access to every electricity market through seamlessly integrating with other platforms"

Stakeholder impact

Our initiative empowers flexibility sellers with unparalleled options for engaging in the market. By consolidating access to all markets into a single, user-friendly interface, we simplify what can often be a complex landscape. Furthermore, we provide them with the necessary tools to precisely evaluate the worth of their assets and enable revenue stacking.

The positive outcomes delivered include:

- Facilitated market development of third-party platform providers
- Sparked competition in the marketplace driving better outcomes for consumers
- Enabled future revenue stacking opportunities across multiple markets
- Ensured the most economical solution (£98,000 saving by final best offer)
- Designed an accessible positive user experience
- Promoted market neutrality.

Options Assessment and Conflicts

5

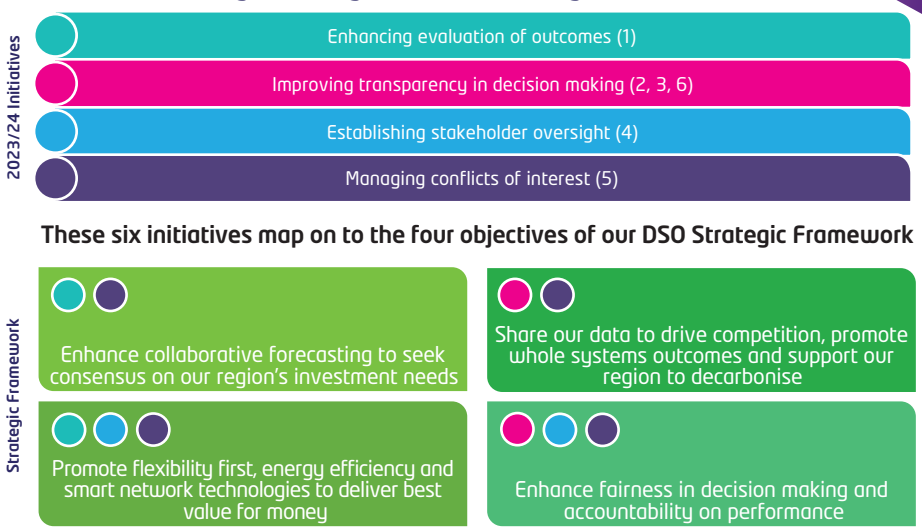
Introduction

We were the first **network to establish a DSO Stakeholder Panel,** which has contributed to key outputs including our DFES and DNOA before publication. **Co-design has been at the heart of our approach,** and we're the only DNO to have engaged directly with stakeholders on our DNOA. Precision has been at the heart of our approach, and we've published details of our decisions with the highest levels of granularity and supportive evidence.

Progress against plan

We've focussed on delivery of 6 key initiatives (further described in Progress Against Plan) that have contributed to enhanced options assessment and managing conflicts of interest.

Figure 19 Alignment to our Strategic Framework



This year, we've made great progress in delivering the initiatives that we set out in our DSO Transition Plan, as set out in Table 18.

Table 18: Progress against ED2 Transition Plan DSO

Theme	Deliverable	Planned status by end of 2023/24	Status year ending 31 March 2024
Enhancing evaluation of options	1. Enhance the ROCBA tool to include micro scenarios, full carbon impact assessment, asset management interventions alongside reinforcement needs, quantification, or qualitative assessment of whole systems outcomes	Delivered	Delayed
Transparency in decision making	2. Introduce a standstill period within the decision-making process for selection of options, to promote stakeholder challenge of the preferred solution choice	Delivered	On track
	3. Introduce a decisions review process to incorporate the DSO stakeholder panel's input	Delivered	On track
Stakeholder Oversight	4. Establish a DSO stakeholder panel and empower it to guide best practice and review decisions and methodologies	Delivered	On track
Managing Conflicts of Interest	5. Employ DSO compliance officer	Delivered	On track

Our guiding principles in action

Adaptive:
We've ensured that the DSO Panel's operating model includes periodic opportunities to review scope in line with stakeholder needs, and our DSO compliance officer has a key role in ensuring the programme is responding reflective of emerging insights.

Best Value:
We've embedded the use of standardised CBA tools, flexed for customer types, to deliver value for money interventions.

Co-designed:
We co-designed the introduction of our standstill period and DNOA with our stakeholders and supported our DSO Panel in the design of its forward work programme.

Digitally enabled:
We're managing operational conflicts of interest by embedding decision-making in our ANM solution and publishing our methodology.

Everyone included:
Our DSO Panel comprises local stakeholders deeply familiar with our community, each embodying our DSO customer personas.

Neutral but not silent:
We have clearly articulated in our DNOA methodology how we will make decisions in the best interest of our customers and have presented our decisions and methodology in clear and accessible ways.

Transparent:
Our DNOA reporting provides unparalleled transparency in decision-making across regions, underscored by our commitment to openly sharing our CBA tool, empowering stakeholders to understand our investment decisions.

Initiatives new to plan

In addition to the planned activity, a new initiative has been added to the DSO Plan this year, in direct response to stakeholder feedback as set out in table 19 below.

Table 19: New initiatives added to plan

Driver	Initiative	Delivery Milestones	Status
Stakeholder feedback - a request for greater transparency in options assessment	6. Publish DNOA	Delivered in 2023/24	On track

Challenges

All the initiatives planned for this year have been delivered on time, with the exception of the ROCBA tool, which is an immediate priority for 2024/25. More broadly, specific lessons have been learnt in the establishment of our DSO Panel and the publication of our first DNOA, which are discussed further in those case studies.

Forward Look

Expanding on our achievements this year, we commit to:

- Collaboratively designing and releasing our first annual Compliance Report.
- Sharing a comprehensive guide outlining our DSO Governance framework.
- Advancing the CEM by enhancing automation within decision-making processes, in partnership with other networks.
- Providing stakeholders with confidence in our network's security and efficiency by publishing data on load indices.
- Establishing how the optimisation of asset solutions can be better communicated as part of DNOA

5.1 Case Study - DNOA

Strategic Context

Options assessment is an important element in investment planning; ensuring thorough consideration of all potential options. Equally crucial is the methodology employed for evaluation, which must be **fair, transparent, and consistently applied** to all investment options. In line with this principle, we have **developed and applied a Distribution Network Options Assessment (DNOA)** process which underscores our dedication to neutral market facilitation behaviours, providing transparent insight into our decision-making processes.

▶ What we heard

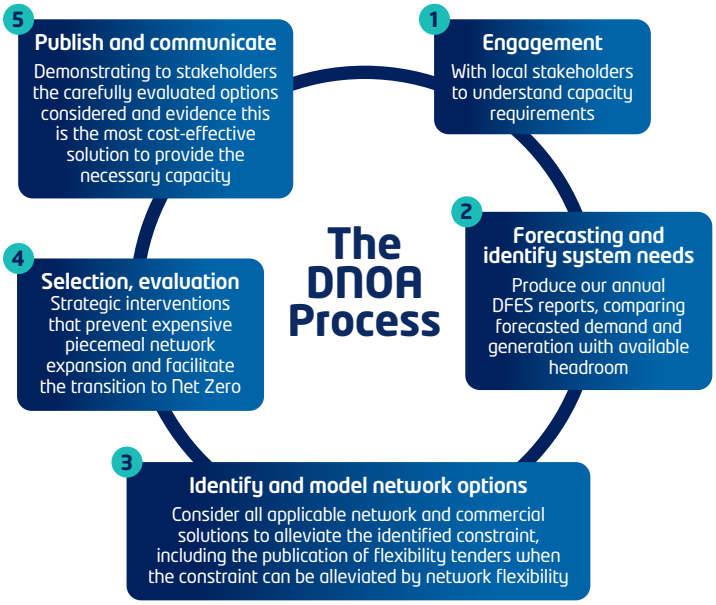
Our stakeholders told us about their desire for **increased engagement in decision-making processes,** spanning forecasting to solution evaluation. Through in-depth discussions, we gleaned their need to better understand the entire investment cycle, delineating each phase and engagement opportunity in a **user-friendly** manner. Moreover, stakeholders expressed concern that DNOs were using different investment appraisal approaches, so we interpreted that we need to clearly **identify the evaluation tools and how they are applied** in the process.

▶ What we did

We created a draft DNOA Methodology document and report in autumn 2023 and then iteratively reviewed and refined it with our DSO Panel over the winter.

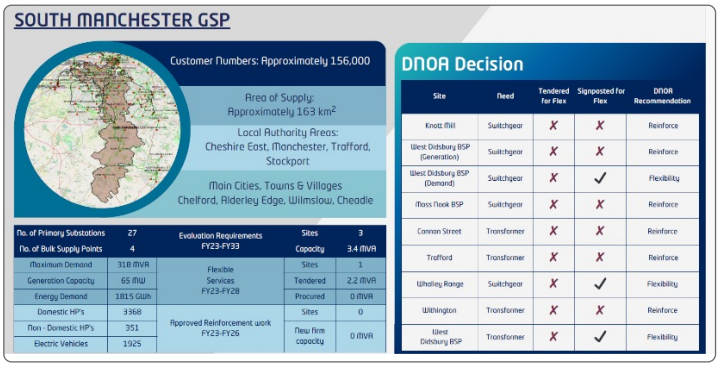
The DNOA Methodology outlines our rigorous and transparent procedures for identifying and evaluating options aimed at addressing network requirements, while also integrating our strategic approach to leveraging competition for meeting those demands. At the core of our methodology lies the notion of a **circular assessment process,** emphasising the pivotal role of options assessment within the broader investment planning framework. Specifically, we clarify the integral involvement of customers and stakeholders in this process, underscoring how their data and feedback drive organisational decision-making.

Figure 20: Our circular investment planning process



Our first DNOA Report represents an **unprecedented level of transparency in decision-making** compared to publications by other networks. This comprehensive document detailed **assessments for each Grid Supply Point (GSP).** Figure 21 specifically illustrates the findings for the South Manchester GSP.

Figure 21: DNOA Jan 2024 Report extract - South Manchester GSP



▶ What we learnt

Through ongoing dialogue with our DSO Panel and a wide array of stakeholders throughout the crafting of the DNOA, methodology, and inaugural report, we meticulously gathered **more than 40 intricate points of feedback.** This invaluable input significantly shaped the ultimate content and presentation of these documents.

Subsequent to the release of both publications, our DNOA webinar convened an additional 35 stakeholders. Their positive reception of the report was accompanied by further constructive feedback, which will be instrumental in honing future reports. Specifically:

- Multiple reports published in quick succession can be confusing, so we should **create breathing space between other related reports** to avoid stakeholder confusion
- Reports include a significant volume of technical jargon and acronyms, so we should **always include an expanded glossary** of key terms and definition up-front
- There is a high level of interest in the expected timelines for increasing capacity, so we should **include timelines as part of the heatmaps** we publish
- The relative granularity of our assessments is appreciated, so we should provide information elaborating on the **decision for each GSP and BSP,** and further coverage of interactions with transmission related reinforcements.

Stakeholder impact

Stakeholder input has contributed to the development of a rigorous and detailed options assessment methodology, characterised by fairness, transparency, and consistent application. Ultimately, the advantages of this approach, which we will monitor throughout RIIO-ED2 and beyond, include:

- An increase in future flexibility dispatched; potential flexibility market participants are more likely to engage when processes are transparent and trusted
- Bill savings for customers; a robust and transparent assessment framework allows for greater challenge and the best decisions to be made in the interests of customers.

▶ What we will do next

- We will incorporate stakeholder feedback into future releases of the DNOA report and facilitate deep dive refinement of our DNOA reporting with each stakeholder persona.

5.2 Case Study - DSO Panel

Strategic Context

The establishment of a DSO Stakeholder Panel serves as a cornerstone in the delivery of the DSO Transition Plan, offering essential oversight of key decisions and methodologies guiding DSO activities. Moreover, it provides targeted stakeholder engagement, ensuring comprehensive challenge and support for our planned initiatives.

As the pioneer DNO proposing a DSO Stakeholder Panel for RIIO-ED2, we responded to the expressed desires of our stakeholders and customers who sought involvement in shaping the scope and pace of our DSO Transition. Prior to implementation, we vetted our proposal with the RIIO-ED1 Customer Engagement Group, collaboratively drafting the Terms of Reference to ensure alignment with stakeholder expectations.

▶ What we heard

The feedback received from our DSO Strategy consultation fell into four main themes:

1. Decision-making
2. DSO responsibilities and conflicts of interest
3. Data and data sharing
4. Communications.

The Terms of Reference were crafted around these four key themes, with the overarching objective of **'providing independent oversight, challenge, review, and guidance on our DSO transition'.**

▶ What we did

We understood that the DSO Panel was an integral building block of delivering transparency and fairness to our decision-making, and we moved swiftly to put it into place, with the first session held in July 2023. Early sessions were to bring the panel up to speed with their responsibilities with later sessions in 2023/24 providing valuable feedback. The Panel was able to provide informed reviews of our DFES and DNOA documents in the winter of 2023.

The Panel was constituted with the appointment of an independent chair, Andrew McIntosh, Director of Place, Greater Manchester, who assisted with the **appointment of eight panel members representing the DSO customer personas.**

We swiftly established links between the DSO Panel, the Independent Oversight Group, and our other stakeholder panels, through a dedicated webpage and regular contributions to stakeholder meetings from Panel members.

▶ What we learnt

The panel has been in the 'forming and norming stage' in year one, maturing to be able to provide robust challenge and feedback later in the period. This evolution has presented many lessons that have informed a panel-led review of its effectiveness, including:

- **Local buy-in:** We chose to recruit members who represented our DSO personas, rather than national industry experts. This led to a longer learning process, but is already resulting in richer, locally sensitive feedback. The panel has identified some gaps in its representation and will fill these early in the next regulatory year.

Stakeholder impact

The panel's input has had a direct influence on key business publications and consequential impact on stakeholders.
We use the engagement with the panel to better inform both the ongoing delivery of the DSO Transition plan and the evolution of the forward DSO strategy and activities. The table below sets out some of impact highlights of the year.

Table 20: Key areas of DSO Panel influence

Panel asked for	So we did
An enhanced operating model and governance for the DSO Panel, building on the terms of reference	Supported the panel to establish its governance framework and forward work plan, according to their requirements
A range of recommendations to improve the accessibility and ease of understanding of our DFES reporting	Amended our DFES report, taking the recommendations into account, including a plain English review
Recommendations to improve the user-friendliness of our DNOA report and methodology document	Made a range of improvements to the reports, in particular presenting clear counter-factuals, and a clearer delineation of scenarios and forecasts

▶ What we will do next

The DSO Panel has **finalised their forward programme for 2024/25.**

Table 21: New commitments

Feedback theme	We will ...	When we will deliver
Meeting format	Introduce a new meeting format, with each session revolving around a specific theme, with standing items and quarterly reports set for publication.	2024/25
Strategy review	Ensure the panel plays a key role in the review and potential refinement of the DSO strategy	2024/25
Assurance	Ask the panel to assess the progress made in executing the DSO Transition Plan, leveraging insights from an independent DSO assurance audit	2024/25

The independent assurance provides evaluates the ability of ENWL to discharge its obligations against core functions. A report on the key findings is shared with the DSO Panel and ENWL Executive Team.

Kate Gilmartin, DSO Panel Member said:

"I sit on the DSO Panel representing Rossendale Valley Energy, a community benefit society. Smart systems are going to be the key to unlock an affordable transition. I scrutinise the work underway and challenge ENWL in its progressive DSO role to create the change we need"

Introduction

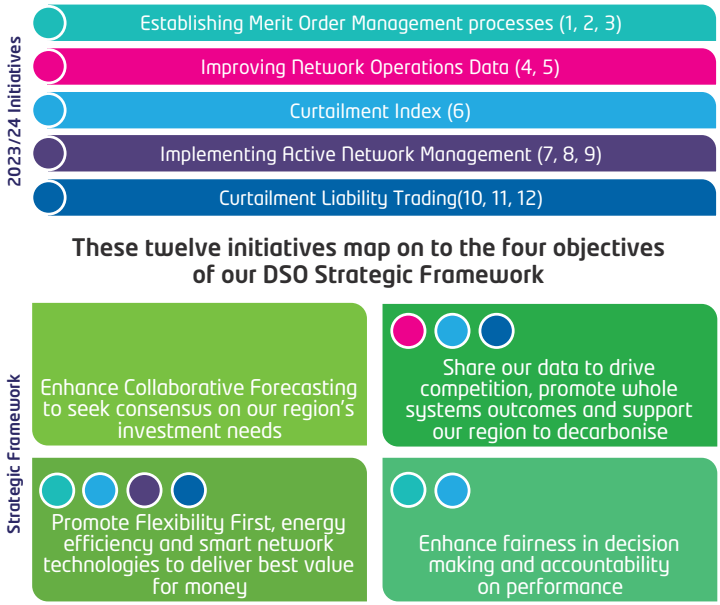
This year we've made significant progress in putting in place robust processes that ensure we can manage DER reliably, safely, and fairly. Our early investments in our NMS have provided us with a solid base on which we can **develop the capabilities our stakeholders require,** like the continuing integration of automated network management. Our NMS improves the **real-time operation of the North West network,** and by **amalgamating it with leading edge innovations, data, and smart system optimisation,** we unlock capacity and energy efficiency.

Much of our focus has been on ensuring that these new capabilities can meet stakeholders' needs and can be trusted, and we've engaged comprehensively to make sure we're meeting that objective. We've highlighted our work in **designing our curtailment index and MOM approach and Operational Decision-Making framework,** both of which are ensuring fair, consistent, and transparent utilisation of resources, as well as **the roadmap to our Future Control Room,** enabled by our extensive digitisation investment to date.

Progress against plan

We've focussed on **delivery of 12 key initiatives** that have contributed to our ability to manage DER on our network. Figure 22, below, sets out how the initiatives we have progressed align with our DSO Strategic Framework.

Figure 22 Alignment to our Strategic Framework



A representative of our Industrial and Commercial Customer Persona said:

"We'd be reluctant to accept a non-firm or flexible connection because the risk of curtailment can undermine the business case for the connected asset. ENWL's peer-to-peer trading of curtailment obligations through BiTraDER could remove that barrier"

Table 22 sets out the progress we have made this year in delivering the initiatives in our DSO Transition Plan.

Table 22: Progress against RIIO-ED2 Transition Plan DSO

Theme	Deliverable	Planned status by end of 2023/24	Status year ending 31 March 2024
Establishing Merit Order Management	1. Introduce the MOM System	Delivered	On track
	2. Develop the processes required to share the merit order list/stack with other stakeholder groups	Delivered	On track
	3. Introduce the trading of curtailment liability	Delivered	Delayed
Curtailment Index	4. Develop processes to establish real-time access for network users to view curtailment stacks	Delivered	On track
Implementing Active Network Management	5. Implement ANM into business as usual	In development	On track
	6. Publish the methodology for generation of curtailment stacks	Delivered	On track
	7. Publish ANM zones and potential constraint information	Delivered	Delayed
	8. Develop flexible services dispatch using an API	Delivered	Delayed
	9. Develop processes to enable network users behind constraints to opt into flexibility trading	Delivered	On track
	10. Develop the processes required to carry out the data exchange of curtailment information via ICCP to other system network licensees	In development	On track

Challenges and Lessons Learnt

As noted in Table 22 there are three initiatives where we are currently delayed against the plan.

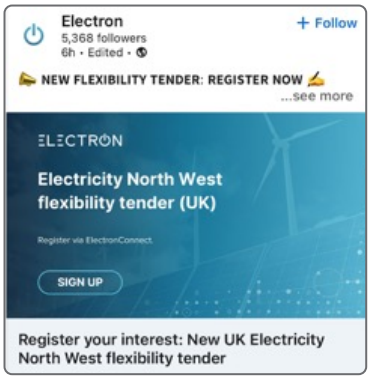
Initiative 3: Introducing the trading of curtailment liability

Our BiTraDER project **has progressed with simulated trials involving DER operators.** By 2024/25, we aim to transition to full simulated trials, paving the way for live trials. In our work this year we've discovered that trading curtailment liabilities is even more complex than anticipated. In addition, stakeholders have emphasised the **importance of secondary markets being stackable with other markets and standardised** with common industry products. Consequently, we've extended the scope of stakeholder engagement within the **BiTraDER project** timeline to ensure thorough testing of these elements.

Initiative 7: Publish ANM zones and potential constraint information

Currently, the absence of active ANM zones hampers the publication of ANM Zones. This is due to delays in integrating the ANM system into our business operations and the lack of connection applications suitable for ANM utilisation. To address this challenge, we **implemented a more targeted approach in our point of connection offers this year.** Sites are now provided with estimates of potential curtailment volumes and a curtailment index where applicable.

Initiative 8: Develop processes to enable network users behind constraints to opt into flexibility trading



Due to the limited requirement for flexible services in 2023/24, coupled with low market liquidity there has been **no requirement to dispatch any services** within this year. For 2023/25 we have partnered with **ElectronConnect to provide an end-to-end service** and registration for our upcoming flexibility tenders went live on the platform on 15 April 2024.

Initiatives new to plan

In addition to the planned activity, new initiatives have been added to the DSO Plan this year, in direct response to stakeholder feedback or lessons learnt, as set out in table 23 below.

Table 23: New initiatives added to plan

Driver	Initiative	Delivery Milestones	Status
Regulatory requirement	11. Development of an ODMF	Delivered in 2023/24 Regulatory year	On track
New licence obligation, in response to a need to accelerate the connection of DERs held in Transmission Network Reinforcement queues	12. Technical Limits Methodology	Delivered in 2023/24 Regulatory year	On track

Stakeholder engagement

The examples provided below are just some of the insights that we have gathered in one-to-one engagements, online discussion forums, and in-person events to understand the challenges faced by each of our stakeholder personas, alongside the actions we have taken as part of our varied delivery plan to meet their nuanced needs. **The persona at the heart of our plans has been the Distributed Generator, however, ESO, Flexibility Aggregators and Industrial and Commercial customers are also supported by our initiatives.** In this section we've structured the examples around five core engagement themes that were prevalent this year.

Theme 1: API standards for Flexible Services

Who we engaged with: DESNZ, flexibility service providers, flexibility services platform providers, Ofgem, network operators, research organisations, standards bodies, and the National Cyber Security Agency.

Which initiatives our engagement informed: 3,10

Insight: Stakeholders advocated for the adoption of an established API industry standard, prioritising cost-effectiveness in implementation, robust cyber security measures to safeguard critical national infrastructure, and ensuring that its integration doesn't hinder new entrants into the flexibility market. However, it's important to note that **not all stakeholders are inclined towards API utilisation for flexible service dispatch.** Some opt for alternatives such as email and Remote Terminal Units (RTUs), driven by a combination of technological preparedness and adherence to their own on-site dispatch protocols.

▶ ***Action:*** Refining based on stakeholder feedback on the Standardised UK API for flexible services dispatch and interoperability, the Open Network Project Technical Working Group has been empowered to pursue or create a standard that is inherently suitable from its inception, rather than aiming for an interim solution while another can be identified or developed. While our trajectory involves a **general move towards standardising API dispatch, we're dedicated to honouring stakeholder preferences by providing alternatives** such as email and RTUs for dispatch, especially when indicated as the preferred choice by providers.

Theme 2: Standardising DER and Network Data

Who we engaged with: DESNZ, DNOs, ESO, flexible services providers, research institutions, DER owners, Ofgem and TOs.

Which initiatives our engagement informed: 4, 5, 11, 12

Insight: To enhance holistic decision-making across the system, there's a growing need for **increased sharing of DER and network data between DNOs and the ESO.** Augmented external data exchange will empower stakeholders to make more informed decisions, thereby fostering improved overall system performance.

▶ ***Action:*** We remain deeply engaged in continuous dialogue with both ESO and DNOs regarding the collection, processing, and dissemination of DER and network data. **Our goal is to elevate collaboration across the system** while enhancing network visibility. Expanding on existing data transfer mechanisms between businesses will encompass a variety of channels, including **APIs, ICCP links, Open Data portals,** and verbal communications through joint working initiatives.

Theme 3: MOM systems design

Who we engaged with: ANM System Original Equipment Manufacturer, DNOs, ESO, Flexible Connectees, Flexible Service Providers and Ofgem.

Which initiatives it informed: 1, 2, 3

Insight: Stakeholders emphasised the importance of having a **system independent from our core ANM system** to maintain a clear separation between DSO commercial decision-making and traditional network operations. They expressed a desire for us to integrate both Flexible Connections and Flexible Services into a **unified dispatch merit order.** Furthermore, Flexible Connections participants advocated for **appropriate caps on curtailment** to safeguard their interests, while providers sought assurance that the utilisation of curtailable connections wouldn't diminish the value stack for Flexible Services.

▶ ***Action:*** We have **developed a MOM system, strategically positioned outside the core NMS** and ANM infrastructure, under the management of the DSO commercial team. This system leverages our **innovative curtailment index methodology,** incorporating pseudo pricing, to seamlessly merge Flexible Connections and Flexible Services into a **unified merit order list.** Further details are given in our Operational Decision Making Framework.

6.1 Case Study - Curtailment Index Method and MOM approach

Theme 4: API standards for Flexible Services

Who we engaged with: ANM System Original Equipment Manufacturer, DNOs, ESO, Flexible Connections Connectees, Flexible Service Providers, Operational Colleagues and Ofgem.

Which initiatives it informed: 7, 8, 9, 10

Insight: Ensuring the integrity of our ANM system is paramount, with a specific focus on enhancing system security without necessitating a surge in the number of control resources required. Stakeholders also emphasised the need to **safeguard against biases in operational decision-making processes.**

▶ ***Action:*** We have **built optimisation into our ANM system** to interact with other Network Management Systems and processes.

Theme 5: Technical limits connections

Who we engaged with: ESO and technical limit connections customers.

Which initiatives it informed: 7, 8, 9, 10

Insight: We must ensure that customers with **connections requiring longer lead times due to transmission-level reinforcement** aren't unfairly disadvantaged by extended wait periods.

▶ ***Action:*** We have **implemented the curtailment index methodology to distribute curtailment proportionally** among all connectees within the technical limits curtailment stack, departing from the conventional Last-In First-Out (LIFO) approach.

Forward Look

The upcoming year marks a pivotal juncture as we embark on the utilisation of flexibility services, thereby **unlocking the mature capabilities ingrained within our NMS and ANM systems.** We have tested our priorities for the year with our stakeholders and committed to:

MOM systems design

- Introducing the trading of curtailment liability
- Publishing our ANM zones and potential constraint information
- Delivering flexible services dispatch using an API
- Consulting stakeholders on the potential for third party management of the MOM system

Standardising DER and Network Data

- Completing the development of the ICCP links between our control room and those of adjacent licensees including the sharing of curtailment information
- Continuing to support industry standardisation of flexible services interoperability alongside data capture and sharing processes

ANM system optimisation

- Integrating the ANM system seamlessly into our BAU operations and transitioning towards a roadmap focused on continuous improvement
- Continuing to test and optimise BiTraDER peer-to-peer trading system and processes

Strategic Context

As a network operator, it's increasingly crucial to showcase our adeptness in making sound operational decisions regarding network management. Our stakeholders demand transparency, particularly in delineating between DSO commercial decisions, technical operations, and market facilitation to avoid perceived conflicts of interest. Leveraging methodologies such as the Curtailment Index and MOM system aligns with our strategic objectives:

- Fostering a **market facilitation** environment characterised by impartiality and fairness.
- Maximising **operational efficiency** to deliver value for customers and stakeholders.
- Upholding **transparency** as a cornerstone of every operational decision undertaken.

▶ What we heard

During the RIIO-ED1 period, we heeded stakeholder feedback advocating against embedding commercial decision-making and dispatch processes into our core NMS. This approach avoids erecting barriers to future structural changes, such as the separation of DNO and DSO functions.

Throughout this year, we have strived to align our approach to curtailing flexible connections with the needs of our diverse stakeholder personas. Through a comprehensive programme consisting of 12 events, including engagements with our DSO Panel and participation from 187 attendees at our DSO Discussion Forums, it has become evident that **stakeholders are eager for us to enhance our ANM and MOM 'bolt-on' systems to maximise customer benefits.**

In pursuit of this goal, we have targeted bilateral engagement with DER owners and operators of sites offered connections under the ESO 'Technical Limits' Programme. This focused consultation aimed to ascertain their preferences regarding curtailment, recognising that they will be most impacted by the methodology. Within our MOM System we can facilitate different curtailment methodologies including:

- **Curtailment Index:** customers with flexible connections are assigned an index value, and a forecasted maximum cap value of curtailment they should expect to see during a year. This ranks the future stack in which flexible connections will be curtailed by the DNO.
- **Last In First Out:** any binding network constraint is resolved by curtailing DERs in reverse order of their connection applications. In this way DERs are insulated against greater curtailment caused by other DERs connecting after them.

We received resounding feedback endorsing the Curtailment Index methodology for fair distribution of curtailment among connectees within the technical limits curtailment stack, contrasting with the less favoured LIFO approach. Network users told us that this methodology instils the confidence they seek of the network's availability for an average time per year. Moreover, it addresses concerns from generators awaiting new connections, alleviating anxieties about being relegated to the bottom of the priority queue.

▶ What we did

We've introduced a dedicated system for generating the curtailment list or merit order encompassing all potential constraints within a specified ANM zone. Our unique curtailment index approach determines the merit order, **ensuring fairness by equally considering assets connected via flexible connection arrangements.** This method goes beyond alternatives like LIFO and shared utilisation, as the sequence is based on the current level of curtailment for each user.

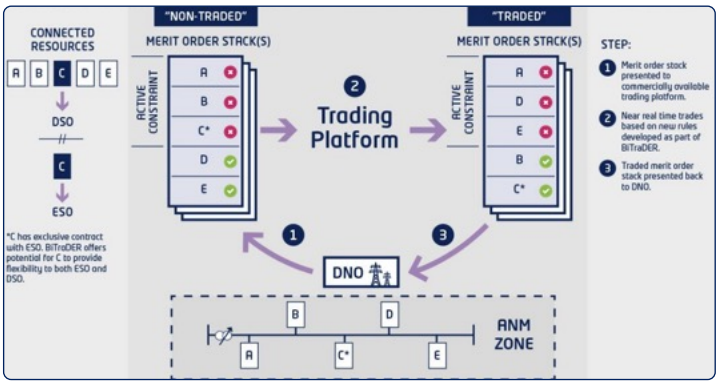
This approach safeguards customers from adverse impacts caused by ANM system usage, ensuring **curtailment remains within agreed thresholds.** Furthermore, to facilitate unbiased deployment of flexibility solutions, all **procured flexible services are integrated into the same merit order list.** Given that flexible services and connections coexist in the stack, assigning values is imperative for optimal commercial prioritisation.

We designed the system such that it assigns a **pseudo price** to the curtailment index in £/MWh, **allowing for comparison with flexibility services** also measured in £/MWh. Configurable within the MOM system, this value transparently evaluates flexibility services against constraints, ensuring a fair and efficient utilisation of resources.

▶ What we learnt

This year we've collaborated closely with our innovation colleagues on the development of the NIC funded BiTraDER project, aimed at creating and testing a methodology for owners/operators of DER Flexible connections to trade their curtailment liabilities. Through leveraging the MOM system, we will facilitate the BiTraDER Peer-to-Peer secondary trading market, serving as a bridge between our network and external trading platforms.

Figure 23: acting neutrally to optimise the stack, mitigate curtailment and encourage market participation



The MOM system initiates the process by providing an initial merit order list to the external trading platform, where network connectees can conduct trading of curtailment liabilities. Subsequently, the traded stack is returned to MOM, which conducts necessary validation checks before passing the traded merit order list to ANM. This setup ensures that MOM acts as a commercial buffer between external market trading and operational control staff in the control room, maintaining efficiency and reliability in our network operations.

This year we've **finished the end-to-end system design and created trading rules** which we put to the test within a simplified simulation workshop in January 2024. We've gathered valuable insights from stakeholders indicating their strong endorsement of our sole customer interaction point being at the moment of dispatch. This independence underscores our commitment to facilitating a neutral market, **allowing market dynamics to dictate pricing,** and enabling us to fulfil our role effectively as market facilitators.

Stakeholder impact

Our strong flexible connections offering, and innovative MOM approach deliver several positive outcomes:

- Enables customers to negotiate various levels of security of supply for their flexible connections while also engaging in Flexible Services through multiple contracts for flexible connections and flexible services being enabled at the same site/asset.
- Compliance with curtailment indexes, ensuring proportional curtailment and minimising the risk of limits being breached, through automatic monitoring and adjusting of the stack.
- Pseudo pricing prevents curtailment being perceived as a 'free option' to the DNO and fosters a market for Flexible Services to address constraints cost-effectively.
- Greater operational capability through 'drop-to' and 'drop-by' DER dispatch methodologies. This allows us to tailor the dispatch methodology to the type of flexibility being dispatched and appropriately baseline and settle where applicable.
- Facilitates auditing of decision-making processes and engagement rates, promoting openness and transparency for future operations.

▶ What we will do next

Our forward-looking initiatives to deliver over the next year are summarised in table 24.

Table 24: New Commitments

Feedback theme	We will ...	When we will deliver
Enhance ANM and MOM 'bolt-on' systems to maximise customer benefits	Integrate ANM and MOM into our standard operations. The MOM system will amalgamate commercial operating contracts for both flexible services and connections, feeding a generated Merit order list into ANM for action.	2024/25
	Within the BiTraDER project, expand simulation trials of market trading among network connectees facilitated through data exchange between ANM, MOM, and the new Electron Market Trading Platform.	2024/25

6.2 Case Study – Operational Decision-Making Framework

Strategic Context

As society increasingly relies on electricity networks to navigate daily life, it's imperative for us as network operators to showcase our dedication to making sound operational decisions.

Operationally, our core focus lies in ensuring:

- **Safety:** Prioritising the safety of everyone interacting with and impacted by our network.
- **Security and reliability:** Continuously enhancing the reliability of the electricity supply.
- **Efficiency:** Operating with optimal efficiency to deliver value for money to customers.
- **Transparency:** Upholding transparency in our operational decision-making processes.

These priorities underscore our dedication to serving the community and fostering trust in our operations, while making sure that **customers are only paying for things that are needed.**

▶ What we heard

Stakeholder feedback on our decision-making frameworks has been actively sought through various avenues, including our annual series of DSO Discussion Forums, DSO Functions Webinars, and consultations.

In response to this feedback, our approach this year has centred on **fostering closer relationships with stakeholders through bilateral engagement.** This proactive stance has allowed us to engage with a diverse array of stakeholders, including customers, DER owners and operators, Flexible Services Providers, Ofgem, DESNZ and the ENA, as well as the ESO.

From this feedback, we recognise the paramount importance for stakeholders to comprehend the rationale behind our operational decisions. Stakeholders are increasingly seeking assurance that we operate the network transparently, and fulfil our commitment as a neutral market facilitator. Stakeholders have conveyed that our communication of operational decision making methodologies such as the DSO Strategy, Grid Digitisation and Data Strategy, RIIO-ED2 business plan has instilled confidence. However, they have expressed a preference for us to **consolidate all these diverse messages into a single document for easier reference.**

▶ What we did

We've **unveiled our** Operational Decision Making Framework (ODMF), addressing stakeholders' need for a consolidated understanding of our decision-making process. It outlines key use cases, establishes the hierarchy of decision-making processes and systems, and integrates network automation systems, flexibility measures (such as Flexible Services, Flexible Assets, and Flexible Connections), and human decision-making components.

The ODMF sets out how we are digitalising the network and utilising network automation systems to make operational decisions. This means faster, reliable, and consistent decision-making required to fulfil our commitments. However, it also explains how we retain human oversight of these automation systems, allowing users to ensure the systems are delivering upon our commitments and providing the fall-back capability to switch to manual operation if these systems become unavailable.

▶ What we learnt

In the past, most demands on the distribution network were outside of our control, with little generation connected at a distribution level. But today, we can signal demand and generation resources in the network, influencing how they behave. Also, technology advancements let us operate network assets remotely, changing the network's layout to control power flows instantly. With widespread use of monitoring and control technology, we've learned to make the most of connected DER, improve how we use existing network assets, boost supply security, and reduce the need for traditional network upgrades.

We've delayed elements of our ANM roadmap planned for this year, while improvements are made to our NMS that will allow future bolt-ons to be more effective. Prioritising automation upgrades has been crucial for faster customer reconnections after faults. Furthermore, the rollout of our Smart Street programme has sped up customer connections to low voltage networks, especially in areas with high LCT uptake. We've adjusted the ANM project timeline to **focus on improving core logic for more efficient system operation,** including faster connections within transmission network queues. Local stakeholders support our approach, citing fewer network constraints in the North West, but they've requested regular ANM rollout updates.

Stakeholder impact

Improved transparency benefits our stakeholders by:

- **Confidence** that Electricity North West is truly acting as a neutral market facilitator and that any potential conflicts of interest are openly and transparently managed.
- **90% of DSO participants** in our Stakeholder Satisfaction Survey **agreed that we are clear and transparent with our decision making;** a strong foundation to build upon.
- Through providing greater detail in one document, stakeholders are empowered to make **informed operational and commercial decisions.**

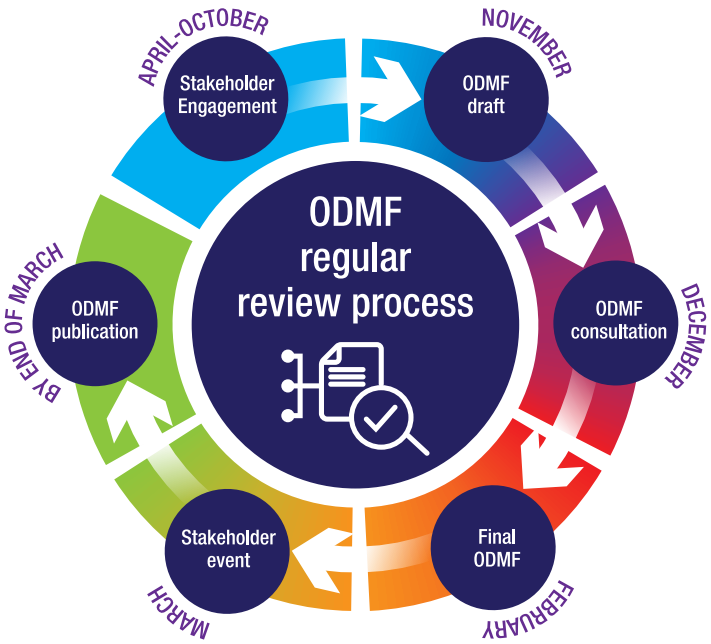
▶ What we will do next

We will engage stakeholders consistently throughout the year to gather valuable feedback on the ODMF document and its associated processes.

Table 25: New commitment

Feedback theme	We will …	When we will deliver
Ongoing structured engagement	Leverage our DSO Stakeholder Panel and wider engagement to evaluate and iteratively improve our processes, informing updates to our ODMF, with any updates published annually	2024/25
ANM	Accelerate deployment of our ANM integration roadmap	2024/25

Figure 24: iterative engagement and refinement of the ODMF



6.3 Case Study - Future DSO Control Room

Strategic Context

As we transition to system operations, our control room operations must adapt. To support Net Zero, we must make operational decisions faster and more frequently. Empowering our control engineers with greater network automation allows for increased network usage, enhanced security, and cost-effective solutions. Furthermore, our investments in a state-of-the-art NMS and ANM applications provides a solid base on which to build the capability of the DSO control rooms of the future.

▶ What we heard

We have engaged with a range of stakeholders to understand their expectations of the capabilities of our future DSO control room, including industrial, commercial and domestic customers, flexibility providers, and other industry representatives. They told us they want the future control room capability to meet the following requirements:

- ensure **ease of access** to and use of the network;
- maintain a **safe, secure and reliable** network;
- reflect **best value for money;** and
- ensure decision-making for dispatch is based upon commercial drivers within a technical framework and **managed by the DSO,** not the DNO.

▶ What we did

We worked with **stakeholders to co-design our future control room roadmap.** The roadmap ensures we will have mature solutions in place to deliver a combination of automated and manual dispatch methodologies for flexible resources.
The control room and operations staff will retain the ability to manually dispatch assets if the automation systems are not operational, or during periods where there is a safety or security of supply need to discontinue automation. This will be facilitated through increased network monitoring, powerful energy forecasting engines, Artificial Intelligence (AI) driven state estimation, and data sharing with other network and market operators.

We've started to deliver the first stages of that roadmap this year. We've developed tools and processes needed to empower our existing control room staff to be able to facilitate new DSO roles, without the need for additional personnel. We have **created separation of the commercial and technical elements of dispatch and control** to fulfil our role as a neutral market facilitator.

Additionally, we have **created autonomous tools that carry out decision making, and dispatch based upon pre-defined rules.** These rules are established in advance by both DSO and DNO commercial and technical teams to ensure that we are fulfilling our commitments described above. These systems include: post fault restoration of supplies, dispatch of Flexible Services, constraining/ curtailing Flexible Connections, voltage optimisation, assets thermal optimisation, network topology changes, fault detection and location, and the location of potential future faults.

▶ What we learnt

We have learnt that although we do not foresee the need to increase the staffing volumes to deliver these future control room capabilities, there is a **significant upskilling, re-training of existing control room staff, as well as a natural need to train up the future generation** of control personnel. With more autonomous systems, the control engineer's role is starting to resemble a pilot utilising an autopilot. They will need to trust that the systems will make the right decisions and only intervene where necessary. For example, in the event where the automation has not been able to resolve the constraint, or there becomes a significant risk to the network; or where the decision-making falls outside of the programming of these systems.

Stakeholder impact

Investment to date has seen immediate benefits for stakeholders including:

- **Increased resilience to large-scale weather-related faults:** we have been able to restore over 423,000 customers supplies within three minutes of faults occurring, using new systems to locate the most likely sections of the network where a fault may have occurred. Tele-controllable assets are utilised to rearrange the network topology to restore as many supplies as possible, also reducing the search area for operational staff to find the faulted asset(s) further improving the time taken to locate and fix the fault.
- **Faster, easier and cheaper LCT connection:** we've rolled out devices that carry out automated voltage optimisation, creating more headroom for the connection of embedded generation.
- **Savings on energy bills:** increased network automation and flexibility will release up to 20% (500MW) of underutilised network capacity, saving up to £44m in the form of avoided network reinforcement. The Social Value Framework indicates that over 5 years (RIIO-ED2), releasing capacity will create £2.93 social value in excess of every £1 spent.
- **Local economic growth:** through the enabling of connection of six community energy projects this year. The main quantifiable outcome delivered by this year's projects and £83k funding is financial and carbon savings through PV panels, EV chargers, Heat pumps and LEDs generating a total social value of -£0.14 in excess of every £1 spent over 12 months (due to upfront costs), rising to £3.01 over five-years.

▶ What we will do next

We are now refining our future control room through a comprehensive co-design process with our stakeholder community and our focal areas span three key feedback themes as follows:

Table 26: New commitment

Feedback theme	We will...	When we will deliver
Ongoing structured engagement	Publish the outcomes of our engagement process so that stakeholders can continue to hold us to account	2024/25
Roadmap delivery	Continue to deliver roadmap enhancements to our ANM system and control management toolkit	2024/25
Evolving best practice	Continue to work with industry working groups to adopt best practices regarding operational and planned data sharing	2024/25

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Moving forward into 2024/25

Thank you for reading this review of our delivery during 2023/24.

Over the course of the year, we've been co-designing a detailed roadmap of initiatives for 2024/25 and beyond, many of which have been highlighted in the 'forward look' sections throughout this document.

Following our recent DSO Stakeholder Conference, we're prioritising those actions and will be publishing our refreshed roadmap in the summer of 2024.

Benjamin Grunfeld
Strategy and Growth Director

We attended the Flex Forum: Reducing Barriers in Distribution Flexibility Markets, in May 2023 in a collaboration event with Piclo, UKPN, SPEN and NPG. Our commitment to industry collaboration reduces the risk of stakeholder fatigue.

DSO colleagues engaged with stakeholders at the Westmorland County Show in September 2023. The rural show was attended by over 37,000 visitors and enabled us to interact with underreached stakeholder personas.

Strategy and Growth Director Ben Grunfeld led engagement at our Future Energy: System Operation in the North event held in Manchester in October 2023 to support the company's DSO activities. The event showcased our flexibility-first approach, world-class forecasting techniques and commitment to whole system outcomes.

DSO Commercial Strategy Manager Lois Clark co-led a panel discussion on the future needs of the energy system at the Distributed Energy Show in Telford in March 2024.

At our Distribution System Operation: Voice of the North West event, held in Manchester in April 2024, stakeholders, including our DSO Panel, co-designed changes to our forward-looking strategy, alongside members of our DSO team and wider business support functions.

Ian Smyth, our CEO, takes part in a panel hosted by the Mayor of Greater Manchester, Andy Burnham and Greater Manchester Combined Authority. Members of our Flexible Services engaged with stakeholders via panels, workshops, networking and exhibition stands showcasing challenges, solutions and opportunities.

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