



SSEN DSO Submission 2024

SMART, FAIR, NOW



Scottish & Southern
Electricity Networks

DSO Powering Change



WE'RE DELIVERING AT PACE FOR OUR COMMUNITIES



"I'm delighted to present our first annual DSO report showing how our strategy is delivering for customers and communities. We're ambitious in terms of scale, innovation and engagement when it comes to our DSO activities and this ambition is being accelerated through many applications, developments and collaborations across our regions."

Chris Burchell,
Managing Director,
SSEN Distribution



OUR MISSION

To accelerate the DSO transition by:

- **creating the capacity** customers need to transition to net zero.
- enabling a **just and inclusive transition** that encourages participation.
- utilising flexibility to **enable faster connections**.
- responding to immediate and emerging network needs **quickly and innovatively**.

OUR FOCUS AREAS

- **planning our networks for the long-term** – taking the right steps now to proactively and efficiently release capacity.
- **deploying our DSO toolkit** of strategic investment, access products and flex services.
- **promoting our governance**, decision-making and transparency mechanisms.
- **harnessing the power of local** – acting on the needs of customers, local authorities and the LV network.
- **transparent and accessible real-time data** to enable whole system coordination.

OUR APPROACH

- be **pragmatic and purposeful** to drive genuine customer benefit, informed by insights and evidence.
- deliver benefits through **collaboration and enabling wider market access**.
- empower customers with **tools and data**.
- **deliver benefits now** through embedding ED1 innovation as BAU whilst **continuing to innovate for the future**.

Our journey to net zero is well underway and our Distribution System Operator (DSO) functions are accelerating this transition, enabling whole system benefits and using flexibility as a driver for fast and efficient access to and investment in the grid.

We're passionate about getting DSO right so we can help our customers to connect, speed up decarbonisation efforts and unlock economic value in the communities we serve. Flexibility is a fundamental tool to help us achieve this, so we can provide access to markets and services today, alongside creating the networks needed for the future at the right time and place, in the best, most cost-effective way.

To that end we're continually working with customers, stakeholders and governance bodies to challenge and refine our plans, to ensure that they continue to keep pace with needs and expectation.

For us, the principles that we're promoting through our Smart, Fair, Now campaign are at the heart of our strategy to getting this right and addressing many of the challenges that the net zero transition presents.

Smart – We're using data and innovation as BAU, to both empower and enable our active customers, whilst driving the transformation of our own systems and processes for those who prefer to enjoy automated progress.

Fair – We believe passionately that we must ensure that nobody is left behind – and that the energy transition is just. I'm very proud that as the first DNO to publish a just transition strategy, we're playing a leading role in upholding fairness and inclusion.

Now – The net zero transition is not a future event, it's happening now, and our four key pillars of action, that you will read about in this submission, provide the pathways through which we're building smart and fair energy system right now for our communities.

Our DSO operating model supports capability building within the business, and to ensure complete transparency, we've set up our governance structures to ensure that our decision-making processes both challenge and authenticate our plans, whilst also ensuring that we deliver benefits in the interests of our customers.

Key to icons in this report:

- First DNO
- Third party data
- Data portal
- Collaboration
- New
- Innovative

OUR 23/24 ACHIEVEMENTS

Data Portal – first Distribution Network Operator (DNO) to publish its full half-hourly smart meter data consumption datasets.

First DNO to partner with **Icebreaker One** and implement their Trust framework partnerships – FIRST, helping to inform industry best practice.

Shared realtime data across all voltages via the **NeRDA portal** which sees 3k+ visits a month, with approx. 20% first time users and around 20 API users engaged.

Launched Local Energy Net Zero Accelerator (LENZA) tool that has been provided to all our local authorities.

p.8 Data and information provision

Scaled up flexibility procurement to improve market confidence: we've procured over 700MW of flex services, deferring over £44m of reinforcement through flexibility dispatch.

11 aggregators and suppliers voluntarily registered to protect consumers interests by following the **HOMEflex Code of Conduct** during the National Grid DFS 23/24.

7GW of new capacity unlocked through ramping products and technical limits.

p.14 Flexibility market development

Appointed 12 **Net Zero Advisors** to support the development of Local Area Energy Plans (LAEPs).

Published **2050 Net Zero Strategic Plans for our first five Grid Supply Points (GSPs)**, supporting transparency and coordinated strategic conversations.

VFES (Vulnerability Future Energy Scenarios) – First DNO to enshrine care for most vulnerable customers in future network planning.

A new Connections Business Relationship Team working with customers to translate requirements into needs cases for strategic investment.

p.20 Options assessment and conflicts-of-interest mitigation

Published our **Operational Decision Making (ODM) framework** which shows how and when we dispatch flex and our **Seasonal Operability Report** which details the outcomes so stakeholders can monitor performance and engage on future changes.

p.27 DER visibility and dispatch

WE'RE ACCELERATING DELIVERY OF DSO BENEFITS

OUR THREE-YEAR PLAN

In years 1-3 of ED2, we're making immediate improvements, while building capability and programmes that deliver for the future. To achieve this, our three-year accelerator plan focuses on:

- Making real-time, granular network **data and decision-making** methodologies transparent to support innovation, coordination, and industry trust.
- Providing sector-leading **support for communities** to enable net zero, and engaging to develop strategic plans to release capacity ahead of need.
- Applying a **Flexibility First Approach**, simplifying participation via product and data roadmaps and using a third-party market platform to support procurement and coordination.
- Ensuring **inclusivity, fairness, and transparency** in the flexibility market, particularly for micro businesses and vulnerable customers.

COURSE CORRECTION

Superseding our initial five-year programme, our three-year accelerator plan is responding to immediate and fast emerging demand for DSO services, and is enabling action and benefits in the areas that matter most.

OUR GOVERNANCE MODEL

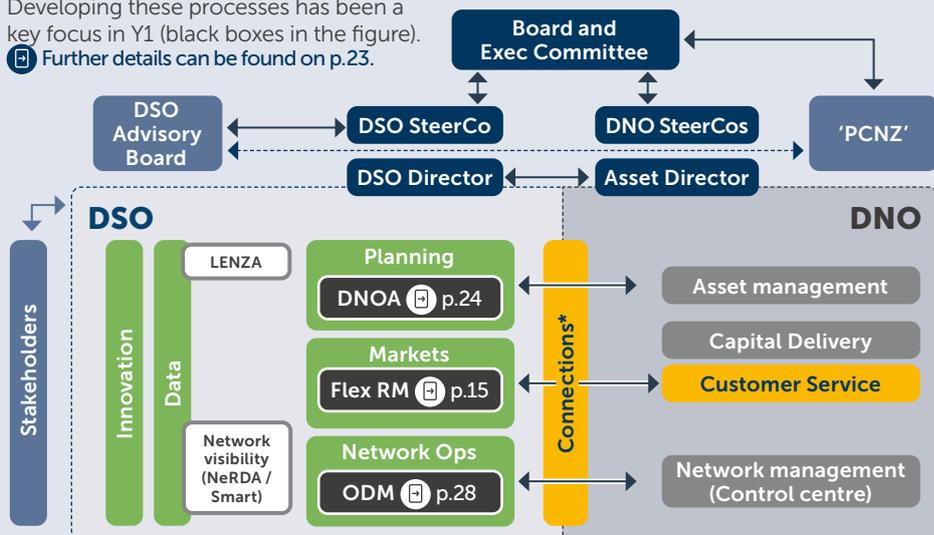
Our DSO operating model sets out how we are delivering our plan, our decision-making governance, the interactions between DNO and DSO and where key processes and focus areas sit; this brings us the best of both worlds by ensuring true independence of decision making whilst optimising efficiency and value for customers in organisation design.

Developing these processes has been a key focus in Y1 (black boxes in the figure). [Further details can be found on p.23.](#)

Capability building has also been a key focus in Y1 showcased through initiatives like power system trainings [p.21](#) partnership, net zero advisors [p.25](#).

Key

- Governance
- External
- DNO
- Customer-facing
- DSO
- Tools and data for stakeholders
- Key processes for decision making



*Our DSO teams enable new connections through the efficient release of new capacity and scheme specific analysis and design. Our DNO team provide focused customer engagement and support.

DELIVERING BENEFITS IN Y1

This first year of the RIIO-ED2 price control, our strategy has been focused on making meaningful progress and delivering measurable benefits across the following areas:



Providing data and information based on stakeholder needs

We're sharing data to serve others, with a value-focused targeting of stakeholder needs, by:

- Being intentional in our data sharing: focusing on delivering what customers want and value. [p.8](#)
- Using data and collaboration to understand communities' long term and granular network needs. [p.13](#)
- Improving the quality and accessibility of data to ensure continued value for stakeholders. [p.13](#)



Developing an inclusive marketplace for flexibility

We're expanding the services available and encouraging participation in the marketplace, by:

- Using flexibility as a tool to connect customers faster. [p.16](#)
- Delivering whole system benefits to enable wider market access. [p.16](#)
- Procuring flexibility with purpose to resolve specific and local network needs. [p.18](#)
- Driving a just and fair energy transition and co-creating inclusive LV flexibility products. [p.19](#)



Options assessment and conflicts of interest mitigation

We're ensuring transparency in our forecasting and strategic planning processes, keeping local needs in mind, by:

- Proactively and efficiently planning long term future investments that will deliver our Net Zero Ambitions. [p.21](#)
- Making decisions in an open and transparent way that considers the needs of stakeholders. [p.23](#)
- We are engaging with local communities to help us understand the future needs of the network. [p.25](#)



Distributed energy resources dispatch decision making framework

We're realising the value of flexibility through coordinated dispatch of flexibility, by:

- Being transparent in operational decision-making, processes and outcomes. [p.28](#)
- Providing timely visibility of DER from our market platform and ANM solutions. [p.29](#)
- Collaborating and coordinating with NESO and others to enable market access, interoperability and system integrity. [p.30](#)
- Working to support large scale implementation of Local Constraint Markets. [p.30](#)

WE'RE COLLABORATING WITH STAKEHOLDERS TO SHAPE OUR DSO

From our regular engagement channels, we understand that DSO stakeholders have different preferences and needs to other stakeholder segments. Therefore, in refreshing our strategy from ED2 we took a collaborative strategic engagement approach which involved:

- Capturing **direct feedback** through roundtable events, local authority engagements and strategic bilaterals on key DSO topics, to help shape our activities.
- Seeking views on our activities and processes through **formal consultations**, on which we further engaged with stakeholders at the start of 2024 to critique and evolve.
- Utilising **informal feedback loops**, such as our regular conversations with industry colleagues, think-tanks and consumer groups, capturing information to help inform and guide us.
- Investing in **relationships and building trust** so we can capture the immediate informal feedback that enables real progress.

We'll continue to use this iterative process to build relationships and trust, shaping our engagement strategy and developing our processes accordingly.

Our approach this year has been to create an array of diverse opportunities for stakeholders to engage with us on a wide range of DSO topics. They are now at the centre of our DSO journey so they can shape our strategy and realise the benefits that are most relevant to them in this transition."

Steve Atkins,
Senior Manager,
Stakeholder Relations



OUR GUIDING PRINCIPLES



Engage to understand the needs of our customers

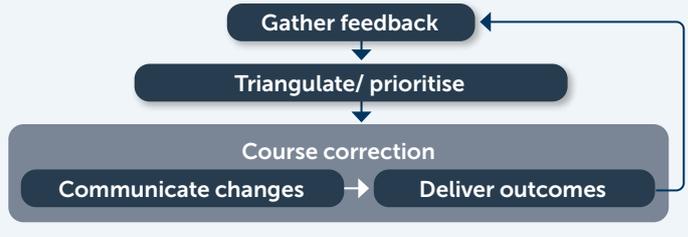


Work collaboratively and unlock additional stakeholder value



Embed knowledge and learning whilst sharing best practice

ACTING ON STAKEHOLDER INSIGHTS



INTRODUCING COURSE CORRECTION

DSO capabilities are developed iteratively, co-creating features based on their input, feedback and suggestions. Occasionally though circumstances dictate that we change course to ensure the maximum benefits for customers. [See p.4 and p.15 for examples](#)

Topic	Priority stakeholders	Key insights
Data and information provision 	<ul style="list-style-type: none"> • Flexibility market participants. • Local authorities. • Distributed generators. • Industrial & commercial customers. • Electricity storage providers. • Consumer advocacy groups. • New connection customers. 	<p>"Requests for further data and easier access to data to unlock flexibility opportunities and facilitate decarbonisation."</p> <p>"Want to see greater standardisation and cooperation between DSOs as well as with the NESO."</p>
Developing an inclusive flexibility marketplace 	<ul style="list-style-type: none"> • Flexibility market participants. • Local authorities. • Distributed generators. • Industrial & commercial customers. • NESO and (the future) market facilitator. 	<p>"Forecasting of long-term flexibility needs would be a useful tool for stakeholders."</p> <p>"Sharing of the end-to-end processes to provide trust and improve participation."</p> <p>"Clear messaging needed on the role of flexibility."</p>
Forecasting and planning future needs 	<ul style="list-style-type: none"> • Local authorities. • NESO, TOs, DNOs and IDNOs. • Consumer advocacy groups. • Distributed generators. • Industrial & commercial customers. • Electricity storage providers. • Gas networks. 	<p>"It is important to be open and transparent when evaluating network needs."</p> <p>"All benefits must be considered when making judgements on CBA, not just network costs e.g. wider societal benefits."</p>
Developing network flexibility at scale 	<ul style="list-style-type: none"> • DER stakeholders. • Flexibility market participants. • Industrial & commercial customers. 	<p>"Desire for transparent and purposeful decision making with simplified decision-making framework."</p> <p>"Visibility of utilisation volumes wanted."</p>

ENGAGEMENT IN ACTION

2,311

stakeholders directly engaged with

198

events held



165

online events reaching 971 stakeholders

Hybrid DSO Conference with **103** attendees

33 in-person events held

25 strategic bilaterals with executive level stakeholders



ACCELERATING DELIVERY OF OUR DSO

START OF ED2

By October 2023 our connection pipeline had already exceeded 2030 DFES projections. We instigated a review of our strategy to drive connections reform at pace; enable net-zero first investment to meet local needs; and importantly, accelerate the deployment of DSO services we:

-  Launched our LENZA data tool. 100% network visibility of peak capacity using analytics and monitoring. Partnered with Icebreaker One and implemented Trust Framework.
-  Started our Flexibility performance reporting. Collaborated with the rest of the DNO on Standardised Flexibility products through ON.
-  Built new capabilities in our teams – Net Zero Engagement Specialists and system planners. Worked with NERA and stakeholders to identify the most efficient way to mitigate conflicts. DSO Governance to ensure transparency and neutrality.
-  Supported our customers and coordinating with NESO through our Accelerated Loss of Mains Programme.

END OF YEAR ONE

By the end of April 2024, following on from our ED2 plans and refreshed Accelerator strategy we have:

-  Published daily street-level half-hourly smart meter data across the our whole network. 65x increase in daily and near real-time LV data points. Consulted on and published our data roadmap.
-  75MVA of connections accelerated through new Access Products. 7.1 GW of connections offers unlocked through Technical Limits. 10.5 MW/7,800 houses accelerated through innovated capacity ramping. Procured >700MW of flexibility services. Selected our next flexibility generation market platform.
-  Provided LENZA to all our local authorities. 38 local authorities informing our DFES, GSP strategies with 18 DNOA Outcomes and five Net Zero Strategic Plans published. Avoided £44m of reinforcement across ED2.
-  Published our decision making processes for dispatch of DER (ODM). Regularly publish Seasonal Operability Report with ODM performance. We're enabling 477MW of Transmission constrained flexibility demand to connect. Published our Control Room vision for 2027.

April 2023

Aug 2023

April 2024

Year 2

ACCELERATOR PROGRAMME

We launched our 'Smart, Fair, Now' initiative and three-year Accelerator programme, to drive DSO activities at pace. Through this we:

-  Launched our data portal ensuring interoperability and transparency.
-  Re-platformed our smart meter data and collaborated on interoperability standards.
-  Published our public NeRDA (Near Real-time Data Access) tool.
-  Published our Flexibility products roadmap. Offered customers innovative access products to enable faster connections. Collaborated with NESO on developing non-exclusive products and common metrics.
-  Launched HOMEflex to ensure domestic flex is inclusive, fair and transparent.
-  Published and consulted on our methodology for Distribution Network Options Assessment (DNOA), demonstrating how we manage conflicts of interest and provide transparency. Worked with Regen and large energy users to improve the quality and accessibility of DFES.
-  Increased visibility of DER to NESO and stakeholders. Coordinated with the ESO to support Local Constraint Market scaling.

COURSE CORRECTION

The huge growth in LCT take-up signalled the need to build DSO capabilities much faster, so our DSO Acceleration Strategy and Action Plan will now deliver capabilities in three years, not five.

FUTURE

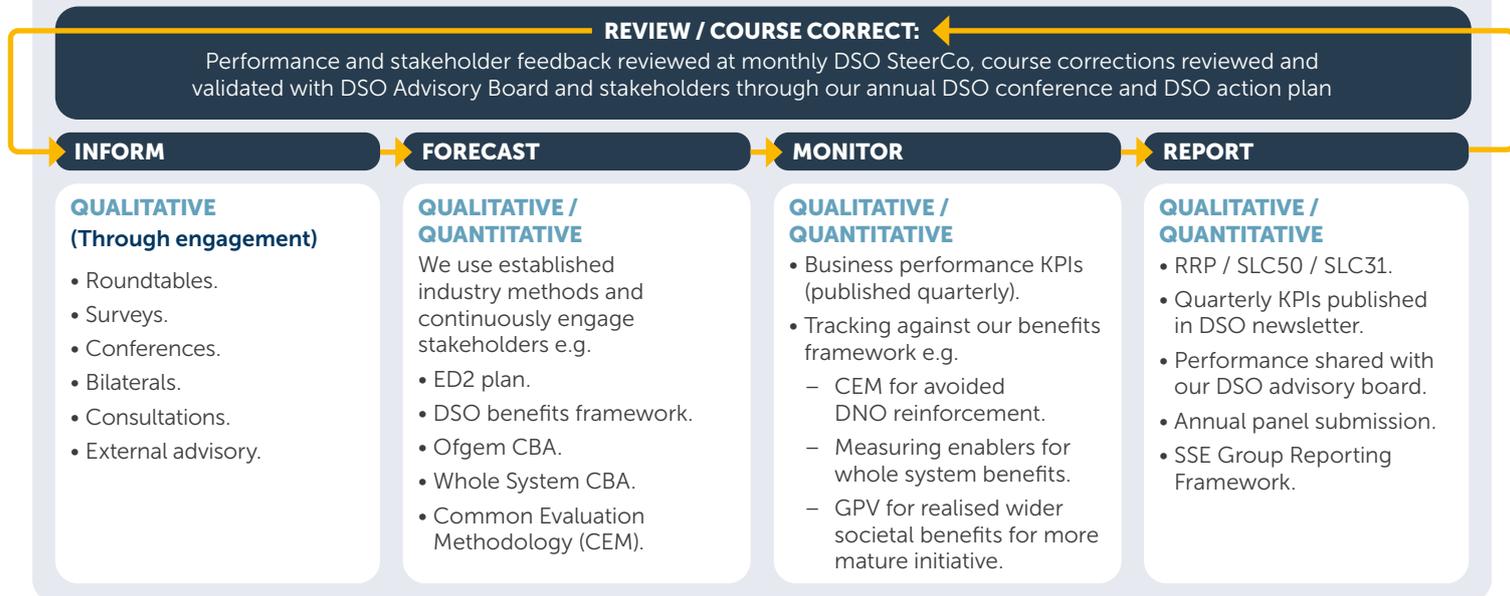
Having completed year one of our three-year plan, setting strong foundations for continued growth, next year we'll:

-  Develop and share Icebreaker One learning as best practice. Refine network visibility through smart metering data. Develop system coordination through increased data sharing. Stakeholder-led development of data portal and platforms.
-  Maximise flexibility to unlock transmission capacity and develop off grid gas solutions. Enable greater variety of contract timeframes and enhanced customer experience through our new market platform. Develop Flexibility Roadmap to optimise full range of flexibility services and access product.
-  Develop and deploy LV products to resolve LV constraints and update our energy efficiency strategy.
-  Evolve DFES methodology along with flexibility roadmap and continue enhanced dedicated local support. Collaborate with local authorities and, ESC and Scottish Futures Trust to further build LAEPs and evolution of LHEES. Support the development of the newly formed RESP and align our DNOA and planning processes. Share learnings from our DNOA methodology with other DNOs.
-  Increase operational data sharing and extend, evolve and formalise operational coordination. Evolve the next generation of operational systems technology alongside our platform and operational technology partners.



WE'RE MEASURING IMPACTS WITH A ROBUST, TRANSPARENT FRAMEWORK

Developed and refined through ED1, and embedded in the business, our approach to forecasting, measurement and reporting is robust, using a mix of qualitative and quantitative tools. We challenge ourselves to be more ambitious through engagement with our stakeholders and our external advisory board and course correct to optimise our performance and delivery.



MEASURING AND REPORTING ON OUR DSO BENEFITS REALISATION AND IMPACT

Our benefits framework measures the impact of DSO activities for different consumers, network users and the wider energy system, and captures our responsibilities to coordinate with and enable whole system benefits.

Whilst it's not been possible to obtain industry-wide consensus on measuring benefits this year, we know through the interim survey we conducted in December that stakeholders want to understand the wider benefits of DSO and how different stakeholder groups could benefit.

Building on our ED2 plan, we've evolved our DSO benefits framework to forecast and measure benefits across three key categories: DNO benefits, benefits for whole system stakeholders (e.g. flex providers, NESO, TOs) and wider societal benefits enabled by our DSO activities.

The overview below, details the predicted benefits to be delivered in the ED2 price control period alongside what we've already delivered, as anticipated benefits were one of our stakeholders' top priorities in our December stakeholder survey.

We report on our performance to our DSO advisory board at every meeting, and through our quarterly KPIs published online and through our newsletter. We'll now continue to work with other DSOs and ESOs to share our approach and drive consistency across the industry to make comparison easier for stakeholders.

NEXT STEPS

We understand there might not be a "one-size-fits-all" approach to quantifying benefits but we know (through our experience with SECV) that sharing and collaborating is important to find common threads and themes. We've had initial discussions with our colleagues at ENWL on this process and will continue to engage with others in the next year towards this goal.

23/24 BENEFITS DELIVERED

DNO BENEFITS		Wherever possible we measure and report on economic benefits realised using recognised methods of quantification. For example avoided or deferred reinforcement through flexibility, that has been arranged with FSPs and validated through the CEM tool for efficiency.
Our ED2 targets	Our focus	23/24 Position
£32M avoided reinforcement cost using flexibility services across ED2	We've completed Detail Strategic Development Plans to ready our network for 2050. Our DNOA process transparently assesses the right mix of strategic investment and flexible services. We proactively offer Access Products (Access SCR, T-D limits etc.) to accelerate connections. Our SWANs ANM system is operating to manage connections for transmission constraints. Our focus on smart metering, and analytics alongside monitoring has increased network visibility – which we share in near real-time on our data portal.	£44M Exceeding our target of avoided reinforcement across ED2
3.7GW Connections accelerated through access products across ED2		3.2 GW On target of curtailable connection offers made with 75MVA of connections accelerated*
100% network visibility and energy forecasting to drive operational efficiency		65-FOLD INCREASE Major increase increase in street level LV data point visibility as a result of our new smart metering platform, 122% increase in LV monitoring data points and 19% increase in smart metering.

* Note: The 3.7GW target is inclusive of all Access Products. The chosen statistic for this stage of ED2 focusses our connection offer activity for Schedule 2D 'Access SCR' type connections.

23/24 BENEFITS DELIVERED

WHOLE ELECTRICITY SYSTEM BENEFITS		<p>SEEN's DSO activities enable whole systems benefits and specifically, whole electricity system benefits (e.g. for NESO and TOs) as a party of the national cross-vector ecosystem. For this, we identify the enablers for benefits realisation that we can influence (e.g. capacity that can access wider market etc.) and measure progress to ensure we are moving at the pace our stakeholders need.</p>
NESO declared benefits across GB*	Our focus	23/24 Position
£22M DER Visibility to improve forecasting and market access: enabled by DSO network visibility	We have prioritised the collection and publication of granular and near-real time data down to street level (LV) and increase information published on DER	899MW (14.4%) New standard of insight increase in DER visibility available to NESO
£104.7M RDPs to deliver asset and carbon savings: enabled by DSO connection and coordination of DERs	Building on our investments in ANM, commercial innovation and operational data transparency we have worked to deliver transmission access ahead of transmission reinforcement. Our approach is to design flexibility and operational tools so that the full value of flexibility can be realised through coordination and avoid exclusivity.	477MW Ready to unlock transmission capacity generation connected ahead of transmission reinforcement by our SWANS and Minety ANM systems
£284M Improved network access planning: enabled by DSO activities to improve visibility, coordination and planning	We are actively engaged with NESO to develop and enable new DER participation through their Local Constrain Market.	750MW Rapid innovation new connections offered early grid access via T-D limits programme
		20.3K Industry first 132kV EHV and 11kV data points shared in near real-time to increase operational coordination

* ESO RIIO-2 Business Plan 2 Cost-benefit Analysis <https://www.nationalgrideso.com/document/249506/download>.

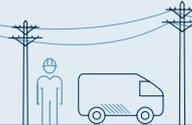
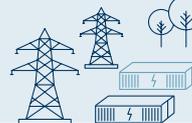
WIDER SOCIETAL BENEFITS		<p>There are established methods for assessing wider societal benefits e.g. Gross Present Value (GPV). As per our benefits framework, we're focused on measuring realised benefits and impact, not forecasts. Only, when a DSO project or initiative is sufficiently mature to have realised benefits do we carry out an GPV assessment. We will continue to add further projects to our assessment as these mature.</p>
Initiative	Explanation	Total social benefits
The Local Energy Net Zero Accelerator (LENZA) See p.12	<p>Network-wide: LENZA could result in savings of:</p> <ul style="list-style-type: none"> • Up to £18m* for 58 LAs in SEEN's licence areas, due to reduced costs in LAEP development and; • Up to £83m in wider societal benefits of achieving net zero such as improved air quality, reduction in carbon emissions and reduced fuel poverty. <p>*Per local authority: LENZA supports financial savings of up to £308k per local authority, due to reduced costs in LAEP development, and further £1.4m per LA in wider societal benefits</p>	£101M
Smart Meter Data See p.11	<p>Our sharing of Smart Meter Data has the potential to unlock £3.4m societal value per year made up of:</p> <ul style="list-style-type: none"> • £1.64m in ability to make better informed decisions through greater data use. (Using DEZNZ estimates to calculate proportionate value delivered by smart meters to be £0.76 per smart meter per year). • £1.9m by allow suppliers to identify patterns of behaviour that may indicate theft allowing them to reduce energy theft more efficiently. (£0.53 per smart meter per year). • £623k in expected energy savings and demand shifting from smart meters could reduce overall network losses (£2.75 per smart meter per year). 	£3.4M
Flexibility Dispatch- Dispatch and coordination of Flexibility Services and Access Products See p.16	<p>This year we have delivered £28m societal value through:</p> <ul style="list-style-type: none"> • £27.5m through reducing delays in connections per MVA can save £450k per year (NERA analysis). SEEN estimates that the initiative has increased connection time by 4.4 years on average. • £9.5k in revenues from flexibility access – the estimated payment for flexibility services is £150/MW/year (ED2 DSO strategy). Figures assume a flexibility services payment of £150. • £53k – in carbon emissions saving (DESNZ's average grid intensity measure) Using the curtailment estimates, we measured the tCO₂e carbon from additional renewable generation vs a no curtailment case. 	£28.3M
Access products to enable connections in West London See p.15	<p>Our actions in West London will unlock annual societal benefits of £37m over the next five years including:</p> <ul style="list-style-type: none"> • £21.2m – Project developments totalling 7800 homes have had their connection dates accelerated (Reducing delays in connections per MVA can save £450k per year – NERA analysis). • £135.1m financial benefits from affordable housing rent and ownership – Affordable homes are sold and rented at 20% below market rate, resulting in significant financial savings. • £29.5m – Affordable housing Social Benefits through through better education outcomes, savings to the NHS, increasing rates of employment and reduced crime. 	£186M
HOMEFlex See p.19	<p>The adoption of HomeFlex project will unlock £9m for domestic and microbusiness customers over the next five years.</p> <ul style="list-style-type: none"> • £754k – realised through education of smart networks and opportunity to participate and benefit. • £8.01m – through enabling customers to be in better control of their energy use, a proportion of which who are vulnerable customers to whom further wellbeing benefits will be realised. 	£8.8M



OUR DSO DELIVERS BENEFITS FOR ALL CUSTOMERS

Leveraging customer personas to unlock greater benefits

Our customer personas represent specific stakeholder groups with unique characteristics, needs, and challenges related to the DSO customer journey. The personas help us gain a deeper understanding of the diverse range of customers and stakeholders, allowing us to design tailored initiatives, products and services that address the specific needs and deliver relevant benefits for each.

Customer persona and summary of needs	Benefits we've delivered this year
<p>System and network operator</p>  <ul style="list-style-type: none"> • Access to DER for balancing mechanism or ancillary service markets. • A range of API accessible data. • Consistent coordination across markets. 	<ul style="list-style-type: none"> • Significant expansion of real-time network visibility with 20.3K HV, EHV, 132kV SCADA data points published; and 84.1K LV circuit and 36.4K substation half hourly profiles published daily. See p.10 • New data exchanges published enabling 720MW of capacity to be accessed through the Local Constraint Market. See p.30 (LCM) • Enabling 477MW of transmission-constrained flexibility demand to connect. See p.30 (SWANS)
<p>Local authority</p>  <ul style="list-style-type: none"> • Data and support developing local area energy plans (LAEPs). • Local whole systems actor and stakeholder collaboration. • Early visibility of any constraints. 	<ul style="list-style-type: none"> • Provided LENZA to all of our local authorities, delivering benefits of £101m. See p.12 • Created a team of 12 Net Zero Advisors dedicated to supporting local authorities with their local energy plans. See p.25 • First five Net Zero Strategic Plans (NZSP) published and shared for input. See p.21 • Through project LEO-N we're exploring how a new "Grid-Edge Coordinator" role, can accelerate community decarbonisation. See p.19 (LEO-Neighbourhoods)
<p>Aggregator/ Flexibility service provider (inc. battery storage)</p>  <ul style="list-style-type: none"> • Information about the current and future network constraints. • Clarity on flexibility procurement, payments, rules and tariff optimisation. • Easy and simple access to flex markets. • Close to real-time network data. 	<ul style="list-style-type: none"> • Published our roadmap showing where and when we use flexibility. See p.15 • Outlined future network needs and revenue opportunities for flexibility providers through 18 DNOA outcomes. See p.24 • Delivered NeRDA to visualise the network data near real time via maps. See p.10 • Increased market confidence through procurement at scale of 700MW of flexibility. See p.17
<p>Housing developers</p>  <ul style="list-style-type: none"> • Understand future constraints and how they may impact a connection. 	<ul style="list-style-type: none"> • Accelerated 2.5GW connections through flexibility in constrained area of West London. See p.15 • First five Net Zero Strategic Plans (NZSP) published and shared for input, alongside DNOA reports identifying future network pinch-points. See p.21
<p>Distributed generation customer</p>  <ul style="list-style-type: none"> • Fast and easy connections. • Information about the current and future network constraints. • Real-time network information. • Transparency on decision-making. 	<ul style="list-style-type: none"> • Connections Relationship Managers supporting faster connections across our regions. See p.16 • Key information and data sets provided through Data Portal. See p.9 • NeRDA provides ability to visualise the network data near real time via maps. See p.10 • Increased market access and transparency by publishing our DNOA and ODM. See p.24 and p.28 • Provided our Seasonal Operability Report [SOR] to create visibility of network management. See p.28
<p>Large energy user</p>  <ul style="list-style-type: none"> • Fast and easy connections. • Easy and simple access to flex markets. • To be aware of developments in Local Area Energy Plans. 	<ul style="list-style-type: none"> • Released 7.1GW capacity through flexible solutions. See p.16 • DNOA outcomes outlining future plans to develop the network. See p.24 • Innovating for a new 'market-based connections agreement' under which large energy users can trade capacity. See p.17 (ExtenDER)
<p>Domestic customer</p>  <ul style="list-style-type: none"> • Reliable power supply. • Easy connections for LCTs. • Lower energy bills through access to flexibility markets. 	<ul style="list-style-type: none"> • Launched HomeFlex to create confidence in the domestic flexibility industry. See p.19 • Developed flexibility solutions for LV network. See p.18 (LMA) • Enabled connections for 7,800 homes (inc. 2,900 affordable homes) through flexible solutions. See p.15
<p>Vulnerable customer</p>  <ul style="list-style-type: none"> • Reliable power supply . • Information about community incentives. • Support for installing energy-efficiency measures. 	<ul style="list-style-type: none"> • Launched an innovation project (Equal LCT) to explore commercial opportunities for the left-behind segments of society to participate in LV flex. See p.19 (Championing a Just and Fair Transition) • Using VFES to identify customers in vulnerable positions who may need and benefit from additional network investment. See p.26 (Enhancing Local Demand Forecasts)



Providing data and information based on stakeholder needs

We're sharing data to serve others, with a value-focused targeting of stakeholder needs, by:

- Being intentional in our data sharing: focusing on delivering what customers want and value. p.8
- Using data and collaboration to understand communities' long term and granular network needs. p.13
- Improving the quality and accessibility of data to ensure continued value for stakeholders. p.13

WE'VE EXPANDED OUR DATA PROVISION FOR CUSTOMERS

Data sharing is a fundamental enabler for Net Zero. It facilitates coordination and powers continued innovation.

We continually engage with stakeholders to inform the development of our DSO, publish and consult on our key processes, and prioritise releases on our data roadmap and collaboration plan as per our stakeholders' needs. Through sharing our network plans to support Local Area Energy Plans and wider whole system planning, providing forecasts of our network needs and publishing extensive operational data, we're enabling an inclusive and coordinated marketplace that can deliver benefits for customers, networks and system operators.

Our initiatives this year included:

- Delivering a data portal which delivers visibility at all voltages and a roadmap with use cases for our data and our forward plans.
- Delivering near real time HV and LV data sharing (NeRDA).
- Providing our net zero tool (LENZA) to all our local authorities in support of their Local Area Energy Plans.
- Strengthening our connectivity model through analytics.

Collaboration



- Shared our data privacy plan with other DNOs to support industry progress.
- First DNO to publish and share Smart metering data helping to inform industry direction.
- First DNO to partner with Icebreaker One and implement their trust framework partnerships – FIRST, helping to inform industry best practice.
- Sharing best practice of data sharing triage with the rest of the DNOs.
- Initiated DSO collaboration through the ENA Data and Digitalisation SG to define a consistent, industry-wide approach to the collaboration plan.

Outcomes

- Published 24 data sets.
- 34 Data Access Requests.
- 5,130 New users to our Data Portal.
- 543 Return users.
- 20.3K near real-time data points through NeRDA with 3,000 visits a month and 20 API users engaged.

Smart meter visibility:

- Total installed in SSEN – 2.14m (55%).
- SEPD 1.79m (71%).
- SHEPD 351K (43%)

Benefits

- **Over x 65 increase** in LV data point visibility.
- **£3.4m** per year in societal benefits driven by improvement to network management and ability to detect and manage energy loss.

STAKEHOLDER ENGAGEMENT

1,366

stakeholders directly engaged with

159

events held



Typical attendees included:

- DER Customers.
- Local Authorities.
- Flex Market Participants.
- Industrial and Commercial.
- Community Groups.

Insights	Action
Greater granularity of data needed to help unlock flexibility (<i>Data for flexibility roundtable date</i>).	We published data from two million smart meters, updating it daily with figures on half hourly consumption, as well as near real time data from LV, HV and EHV monitors in substations across our network.
Want accessible data to develop future energy predictions, scenarios and plans for their communities (<i>repeat request from local authorities, at events and bilaterals</i>).	We developed our LENZA tool so local authorities could directly pull our data for their Local Area Energy Plans and offered it at zero cost to all the local authorities in our license areas.
Need standardisation of the definitions and datasets between DNOs to facilitate the path to net zero (<i>request in workshops and in Data Roadmap Consultation response</i>).	We collaborated to develop DNO smart metering interoperability standards and led an ENA session with the other DNOs to establish a clear and consistent structure and approach for DNO Collaboration Plans.

WHAT'S NEXT?

- Establish industry best practice working with Icebreaker One to train our staff to manage, share and make open our data ensuring timeliness, accuracy, consistency and appropriate security. Sharing our learning and experience with other DNOs.
- Refine network visibility through the advanced application of smart metering data and other external data sets to augment our network connectivity model.
- Progress and trial data sharing opportunities to support innovation in system coordination and reveal new insights. Work with industry partners such as DCC and NESO.
- Informed by our stakeholders, continue to prioritise the release of new data sets through our data portal and new capabilities in LENZA.



This year we have prioritised data transparency and the tools that support deeper insight and action for our stakeholders, creating opportunities for greater system coordination and innovation. I look forward to augmenting our offering with even more external data sets in the coming year.

Zoe Farrell,
Digital Enablement Manager





AN INTENTIONAL DATA-SHARING APPROACH: FOCUSING ON DELIVERING USE CASES THAT MOST IMPACT OUR CUSTOMERS

A MULTI-FUNCTIONAL DATA PORTAL



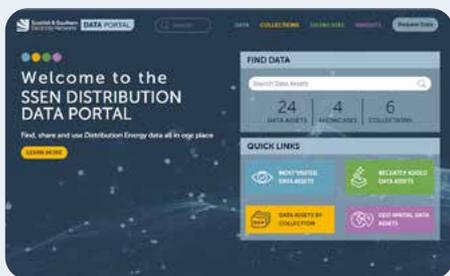
WHY IS THIS A PRIORITY?

Our role in the future energy system is driven by digital and data. The move to a flexible, decentralised energy system requires us to make our systems and processes more digital and build our data use and sharing capabilities.

In a fast-paced world, we strive to continually provide the information that our customers need, in an open and accessible way and in a format they can use. By opening network data, our portal has created opportunities for the flexibility markets, helping to identify the best locations to invest in flexible resources, whilst avoiding unnecessary and costly delays for connections, and enabling others on their journey to net zero.

WHAT WE'VE DELIVERED

The open data portal is a single point of access for all SSEN Distribution data that we share with our industry peers, partners, regulator, and customers. Data is prioritised based on customer needs, and is downloadable in a practical format, enabling sharing and collaboration.



Since its launch in October 2023, we've published 24 data sets, which can be browsed searched, viewed and downloaded easily.

OUR DIGITAL STRATEGY AND ACTION PLAN

Our Digital Strategy and Action Plan are aligned to our DSO strategy, these set out how we've delivered our Data Portal and Data Roadmap, how we continue to improve what we share with stakeholders, and the value they have generated across the network for our customers and stakeholders. We consult on our Digital Action Plan and Data Roadmap every six months as we refine and refresh to reflect our stakeholders' priorities.

OUTCOMES AND BENEFITS

Stakeholders have told us they want data to be more easily digestible and would value support on how our data can be used. In response to this we have taken the following actions:

Publishing our Data Roadmap

By outlining clear milestones, objectives, use cases and target audience we've created a shared vision with our stakeholders which encourages collaboration and feedback. Our focus is on publishing data that our stakeholders want and can use, in formats that are convenient, accompanied by clear use cases.

Building our Data Portal

Supports stakeholder insights and scrutiny and increase trust through transparency.

- Enables better coordination of wider system activities (including NESO) and across the whole energy system.
- Supports exploration, experimentation, and new opportunities from innovators.

Promoting the data we share

We actively promote our news and updates through all channels available, recognising that different stakeholders have different preferred methods of communication. Our recent smart meter press release was covered by multiple industry publications and our partnership with Utility Week is helping us reach a wider audience, and obtain extra insight on stakeholder content preferences.

Publishing our Collaboration Plan

In addition to signaling our commitment to collaboration, this formalised plan actively facilitates and provides specific detail on how we collaborate and partner with other stakeholders to co-develop strategic regional projects, plans and net zero strategies, whether led by us or others.

NEXT STEPS

We're continuing to work with stakeholders, seeking their feedback to deepen our understanding of how data needs differ by stakeholder segment, so we can continue to evolve our data offering and formats.

Our data portal is a platform for collaboration and knowledge sharing for our data consumers. To enhance this we're obtaining consumer consent to gather more information about their data uses, examples of which will be published where we have consent to do so.

...setting up a **data request and triage process** where data consumers can make requests, give feedback, and share successes. This process ensures we share data appropriately, manage risks, and continually make data more accessible. p.9

...continuously engaging with our stakeholders on improving the customer experience for data access, future release prioritisation, and improving data quality and accessibility. p.9

...collaborating with **Icebreaker One** to identify and tackle data silos and develop data-sharing opportunities whilst ensuring customer privacy and cyber-security measures are managed. p.13

OUR APPROACH TO OPEN DATA

We've committed to building a data-sharing ecosystem to support our ambition to lead on the evolution of a Net Zero Data Marketplace while ensuring the security of our assets and resources. This has involved...

...leading several ENA Open Networks working groups, through which we have **collaborated with other DNOs** to share our learnings on how to classify and open up data in a secure. p.11

...introducing a "**Trust Framework**" where we verify and authenticate users before granting access to our sensitive data. p.9

...collaborating with **Ofgem and DESNZ** to ensure we maintain data security whilst still adhering to our license obligations. p.13

...implementing a **robust governance framework** ensuring the latest data is always available. p.13



USING DATA AND COLLABORATION WITH STAKEHOLDERS TO UNDERSTAND LONG TERM AND GRANULAR NETWORK NEEDS

WE'VE CREATED OPPORTUNITIES THROUGH NETWORK VISIBILITY



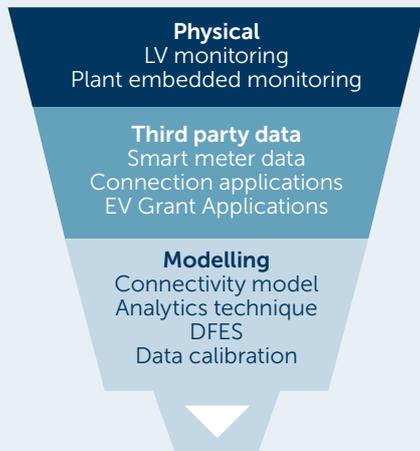
WHY IS THIS A PRIORITY?

Greater network visibility and monitoring, particularly of the Low Voltage (LV) network creates a number of key benefits, most importantly these allow us to:

- plan with more certainty and efficiency.
- use data to better support our customers.
- manage our assets more effectively.
- provide data to facilitate the coordination of flexibility markets, while enabling the optimal utilisation of the network.
- share data with third parties and innovators, enabling them to offer new services to us and to our stakeholders.

Percentage of LV monitors installed against 20k ED2 target.

3,876 Total LV monitors installed
19% installed in Year 1



Network visibility

Network Visibility Strategy published on 22 February 2024

WHAT WE'VE DELIVERED

We've already got good visibility of power flows, quality and voltages on EHV and HV networks that allows us to operate an efficient and economic network. Building on that this year, we've now:

- Installed over 3,000 LV monitoring devices in our secondary substations, with a focus on efficiency and avoiding potential early obsolescence and unnecessary costs.
- Communicated with over two million smart meters installed in SSEN's regions and receive hundreds of thousands of data transactions a day, ramping up to millions a day.
- As more DER are connected we need visibility of the bi-directional power flows as well.

OUTCOMES AND BENEFITS

These actions are helping us to deliver:

- **Network operation improvements:** through mapping of LV capacity, power flows and voltage to enable the proactive management of our network.
- **Customer interruptions improvements:** enabling accurate fault identification and the timely dispatch of operational staff to investigate and restore the network.
- **Improved flexibility service operations** through thermal constraint management and power quality management.
- **Connections acceleration:** the data from the monitors allows far greater accuracy and frequency of load readings to be recorded than Maximum Demand Indicators currently provide.
- **Optimised collaboration with suppliers** to Load Managed Areas across the network enabled through our monitoring data.

NEXT STEPS

- In response to stakeholder feedback, the next version of the NeRDA tool has been improved to include:
 - transformer ratings for capacity and demand so users can better visualise transformer utilisation.
 - the ability to search and navigate all our electrical assets through an improved connectivity model.
- We're building visibility of historic, current and future utilisation of our network and enabling all of our systems to become part of our network visibility platform.
- By incorporating advance notification data from customer enquiries/orders of LCTs we will be able to stay ahead of LCT connections facilitating strategic investment and a seamless customer experience.
- Developing enhanced reporting to support ESO coordination; developing and adopting nascent UK digital sharing infrastructure.



NeRDA – NETWORK VISIBILITY FOR OUR CUSTOMERS

Near-real time data access (NeRDA):

The NeRDA platform is a tool making power-flow information visible, from the HV levels down to our LV level and feeders, with graphical and API access. It's updated dynamically every few minutes and enhanced with the addition of third party data.

We're the **first DNO** to publish network data to this extent with 20.3K data-points in near real-time across the whole of our distribution network. The NeRDA portal regularly see more than 3,000 visits a month with around a fifth being first time users and with around 20 API users engaged.



FEEDBACK RECEIVED



I've been using the NeRDA data for day-ahead and half-hourly-

ahead grid load forecasting, and then calculating a dynamic grid tariff. This enables the control of flexibilities within the distribution network (such as EVs, heat storages, and heat pumps) to mitigate distribution grid congestion. The NeRDA API operates seamlessly, and the team's responsiveness and assistance have been exemplary."

Omid Mousavi,
Lead Data Scientist, KrakenFlex





USING DATA AND COLLABORATION WITH STAKEHOLDERS TO UNDERSTAND LONG TERM AND GRANULAR NETWORK NEEDS

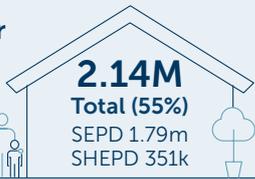
WE HARNESS SMART METER DATA

WHY IS THIS A PRIORITY?

Third party smart meter data can be leveraged against LV monitoring data helping to provide a high level of visibility and accuracy, whilst avoiding the need for extensive modelling and large numbers of LV monitors.

We recognise that smart meter data is not only valuable to us, but also the wider energy sector and customers, so we've made triaged smart meter data available on our open data portal. Smart meter penetration is set to increase from 55% across our licence areas to 80% by 2025.

Smart meter penetration on our network



WHAT WE'VE DELIVERED

- A new cloud based, high performance, DCC adapter to manage the anticipated increase of associated data streams.
- We were the first DNO to have Ofgem approve our Data Privacy Plan to access and share smart meter half hourly consumption data, enabling us to deliver significant enhancements to network data visibility and sharing.

OUTCOMES AND BENEFITS

- We now have access to a greater granularity of data including half-hourly consumption data and maximum demand and voltage data which can feed into our Data & Analytics platform and provide accurate and regularly updated views of load on every aspect of our network.
- With this data we better understand the load profiles and load growth on individual assets on the LV network, which helps us to develop future LV flexibility products.

See p.18



We're delighted to be the **first DNO** to unlock the full consumption datasets at such a granular level, and to make them available on our Open Data Portal.

From this collaboration with our DCC Adapter provider CGI, we now have the systems to process and aggregate large volumes of consumption data for publication, which will help drive a cost-effective transition to net zero, and identify new opportunities for LCTs and flexibility."

Paul Fitzgerald,
Smart Energy Systems
Manager at SSEN



- Smart meters now send voltage alerts if levels exceed the meter threshold (over or under) for a sustained period. We're now using voltage data to enhance services.

BENEFITS

1-Year GPV benefit breakdown



- 48% DNO benefits
- 34% Supplier benefits
- 18% Demand-shifting benefits

NEXT STEPS

- Through the Open Networks working groups, we'll continue to share insights and learnings with other DNOs enabling them to publish smart meter data.
- We'll continue to engage with industry partners, such as the Data Communications Company (DCC), to ensure we're at the forefront of smart meter data initiatives to maximise the benefits that access to, utilisation and sharing of smart meter data can deliver.

WE UNDERSTAND OUR LV NETWORK BETTER

WHY IS THIS A PRIORITY?

We've focused on developing our **connectivity model** to accommodate the increasing number of low carbon technologies connecting to our network. By creating a foundational electrical connectivity model that links customers to all levels of our network, we have:

- A critical tool to help us make informed and proactive decisions about the distribution system.
- The ability to coordinate at a local level and demonstrate whole system solution delivery.
- Greater granularity to support our spatial planning work with the NESO's RESP.

WHAT WE'VE DELIVERED

Through detailed analysis of our assets we've developed an electrical connectivity model of our network, by reviewing our specific asset and service records, right down to LV network and individual connections.

This connectivity model allows us to aggregate lower voltage measurements and calibrate them against the

measurements we take from the High Voltage (HV) system. Combining the two provides enhanced network insight that underpins losses measurement, fault diagnosis and data-quality checking.

To maximise insights we consider the connectivity model over a range of time scales:

- Real time connectivity model** – to signal DER and flexibility services to respond to anticipated overload.
- Forecast connectivity model** – to forecast constraints and generate market signals.
- Planned connectivity model** – to coordinate connections, flexible connections, constraint managed zones and network capacity.

OUTCOMES AND BENEFITS

- The model enables us to optimise monitoring and provide stakeholders increased visibility of our entire network.
- The holistic nature of our model allows for a whole system view so we can plan and dispatch flexibility services efficiently and effectively reducing network costs.

NEXT STEPS

The connectivity model will be further enhanced by the application of:

- smart metering voltage data.
- our modelling of phase connectivity to assign as-built phase connectivity.
- validate connectivity and property assignment.
- identify operation configuration and temporary running arrangements.
- embed into our broader Model Management programme to provide a digital master model of our Network and comprehensive visibility across related systems.





USING DATA AND COLLABORATION WITH STAKEHOLDERS TO UNDERSTAND LONG TERM AND GRANULAR NETWORK NEEDS

OUR PLANNING DATA DRIVES NET ZERO PROGRESS



We publish a range of planning data through our data portal, going beyond licence obligations because we know it provides additional benefits to the wider energy system. The table across the page provides an overview of what we publish and the benefits delivered.

Planning data	Purpose
Distribution Future Energy Scenarios (Up to 2050)	DFES leverages national Future Energy Scenarios and local insights to forecast LCT uptake and strategic demand out to 2050. Read about our DFES improvements p.26
Network Development Plans (0-10 years)	NDPs consist of Network Development Reports and Network Headroom Reports, present our 'Best View' and three alternative scenarios of network capacity.
Long-term development statements (0-5 years)	LTDS provides information for assets connecting to the EHV distributed system and the HV busbar of primary substations. They give a view of the entire network and latest demand forecasts and help identify potential constraint zones.
Net Zero Strategic Plans (up to 2050)	These documents communicate long-term plans at a regional level with local authorities, the Transmission Operator, the System Operator and other key stakeholders for Local Area Energy Planning.
SSEN Substation Data	Details of SSEN substations, their type, identification and location coordinates for both of our license areas.
SSEN secondary transformer – asset capacity and low carbon technology growth	The load model estimates a half-hourly annual demand profile for each household based on a series of demographic, geographic and heating type factors.
Grid supply point (GSP) and bulk supply point (BSP) electricity area datasets	These datasets provide approximate supply areas for both our license areas formed by aggregating the primary substation boundaries that are supplied by each BSP/GSP.
Embedded Capacity Register	The Embedded Capacity Register (ECR) provides enhanced information on connected resources and network requirements, including information on the flexibility services that are assisting to reduce network constraints.
Smart meter LV feeder usage	A postcode and LV Feeder Dataset ID lookup provides aggregated half-hourly consumption data in kWh (combined primary and secondary active import kWh), from the relevant secondary transformer and low voltage feeder IDs with a total count of smart meters.

WE'VE DELIVERED A 'GAME-CHANGER' FOR LOCAL AUTHORITIES



WHY IS THIS A PRIORITY?

ReSOP, an innovation project in ED1, was successful but complex and not easily scaleable. The initial scope meant making decisions on behalf of other energy vectors without proper consultation. Partnering with Advanced Infrastructure, we developed our Local Energy Net Zero Accelerator (LENZA) tool to enable local authorities to independently plan for their local energy needs, and so we can build their plans into our modelling.

WHAT WE'VE DELIVERED

After trialing the tool with three local authorities, through our pre-existing relationships we've invited all 63 of our local authorities to be onboarded to the platform. Alongside access to the data, we provide bespoke support and training to ensure maximum impact.

OUTCOMES AND BENEFITS DELIVERED

- LENZA has empowered LAs to make better decisions about where to place new energy assets. It uses a traffic-light system to indicate whether a new energy asset could be accommodated or if further development is required.
- Councils are using LENZA to develop their own Local Area Energy Plans (LAEPs), which will be key to ensuring local input to the Regional Energy Strategic Planning (RESP) process.



BENEFITS

1-Year GPV benefit breakdown



- 82% Wider social benefits
- 18% Local authority financial benefits



NEXT STEPS

- We're continuing to improve the tool's functionality to allow for direct use in Local Area Energy Planning.
- In response to stakeholder feedback, we're making the tool available to businesses and organisations supporting LAs with their LAEPs.
- Further stakeholder engagement is being carried out (through surveys and our LA roadshows) to understand evolving and emerging needs.



Whether making plans for renewables, designing low-carbon heat projects, or seeking funding for EV chargers, LENZA is an unrivalled source of data and insight. It's also an excellent example of network operators and local authorities working together on plans to decarbonise local energy and reach net zero."

Councillor Ray Bryan,
Dorset Council's Portfolio Holder for Highways, Travel and Environment



NEXT STEPS

- We'll publish our LTDS based on Common Information Model standards from November 2024.
- Working with Regen, and using insight from stakeholders, our next DFES analysis will be enhanced through increasing accuracy, accessibility and fairness.



IMPROVING THE QUALITY AND ACCESSIBILITY OF DATA TO ENSURE CONTINUED VALUE FOR OUR STAKEHOLDERS

OUR DATA IS ROBUST AND GRANULAR



WHY IS THIS A PRIORITY?

We've taken conscious steps to improve the quality of the data we share with stakeholders with processes in place to address gaps in datasets and drive up standards.

WHAT WE'VE DELIVERED

Combining our powerful analytics capabilities, LV monitoring, smart meter data and collaborating with experts in the field has enhanced the quality of our data considerably. We:

- Use smart meter data to give latest view on connectivity and phase.
- Cross reference SCADA, smart meter data and conventional readings to refine visibility.
- Have built in an annual review cycle DFES and collaborated with external experts Regen to ensure the credibility of the analysis.
- Delivered a 65-fold increase in access to daily updated half-hourly data from smart meters and substation monitors.
- **Partnered with Icebreaker One** to ensure that, when we open our data, we do it in a secure and accessible way.



OUTCOMES AND BENEFITS

The benefits of our partnership with Icebreaker One include:

- **Helping us to make our data open without exposing the network to risk** – we're the first DNO to have Level 1 Organisational Assurance which means that we're verified and assured by Icebreaker One as an organisation that manages open data in the right way. This ensures we have the right internal processes in place and that the people that manage our data do it to the standards expected.
- **Assuring our data and ensuring it has the correct granularity** – we're the first DNO to have any data sets with Level 1 Dataset Assurance and currently have 29% with this assurance. Our plan is to have all our data sets assured in coming months. In practice this ensures our data is published in the most accessible way possible.



We're really proud of the progress we've made in improving our data quality through our work with Icebreaker One. To be the first DSO to achieve our certification is a huge achievement and we can't wait to start embedding what we've learnt from the process across our business."

Michael Glass,
Data Governance and Information Manager



NEXT STEPS

We're now commencing further training with our employees to embed good data practice across the organisation – with the support of Icebreaker One we're training all our teams so they manage and share data to an industry standard. This means applying the same standards when sharing data internally as we do when we share open data externally to guarantee that at every stage of the process, we're properly managing accuracy, consistency and security of our data.



Working together with Icebreaker One, SSEN has made fast progress towards harnessing the power of energy data to get to net zero. As the first DNO to achieve Level 1 Assurance, meaning that it is committed to the Icebreaker Principles and its data assurance is backed by a contract. Together with its new internal data management processes and data portal, it means SSEN is a leading practitioner in making energy system data accessible, well-documented, and published with appropriate licenses – a vital step forward in the UK's pathway to net zero."

Laura Townshend,
Icebreaker One



OUR DATA IS ACCESSIBLE AND EASY TO USE



This year, addressing stakeholder feedback, we've prioritised improving user experience with our data. This has involved a specific focus on enhancing the accessibility, the formats in which we produce data, the platforms on which we make it available, and ease of use.

Data formats

By creating more accessible formats we enable our data users to integrate our data into their modeling. A few examples include:

- Using CIM in our connectivity model, and LTDS.
- Making NeRDA and associated API accessible.
- Co-creating and applying interoperability standards to our shared smart metering data.
- Providing granular data in our DFES and new local authority profiles and data visualisation tool to improve accessibility.
- Making internal datasets API accessible to improve the consistency and accuracy across teams.
- Providing user guides with NeRDA and DFES.
- Our new team of Net Zero Engagement Specialists are helping local authorities access, digest and use the data we make available. This comes in response to feedback stating data is complex or hard to understand. **More on p.25**

Customer journeys

To improve data accessibility, we segment stakeholders into personas and develop tailored data products that meet their needs. **See p.7.** By understanding different customer groups' needs, we can better target what existing products and improvements are most relevant. Our four stakeholder journey groups are:

- **New customers (not connected)** wanting to connect to the network.
- **Connected customers** that want to learn more about utilising their assets and connection to create value through flexibility.
- **Collaborators** that want to work with other stakeholders e.g. ESO, DNOs, DSOs, local authorities.
- **Stakeholders** that know exactly what they want and just need access or to speak to someone about it.

The benefits of these user groups enables data and communications to be tailored and relevant to their needs. We're also able to gather insights for ongoing evolution of services.



We're expanding the services available and encouraging participation in the marketplace, by:

- Using flexibility as a tool to connect customers faster. [p.16](#)
- Delivering whole system benefits to enable wider market access. [p.16](#)
- Procuring flexibility with purpose to resolve specific network needs. [p.18](#)
- Driving a just and fair energy transition and co-creating inclusive LV flexibility products. [p.19](#)

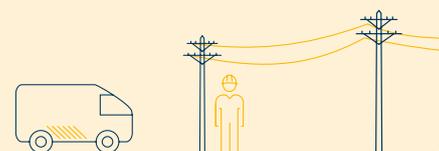
WE'VE PUT FLEXIBILITY AT THE HEART OF OUR STRATEGY

We've procured flexibility at scale (**over 700MW**) and developed the market with improved tools, processes and platforms.

At the heart of this is a 'flexibility first' approach, to enable the market through a third-party platform partnership securing a variety of procurement horizons, and develop tools and process to build trust in the domestic flexibility market. Our initiatives this year included;

- Publishing our Flexibility Roadmap which sets out how we use different flexibility products to resolve network needs, and how they will evolve over time.
- Developing innovative access products to enable faster connections in constrained areas and behind transmission constraints.

- Offering standardised and non-exclusive products, with NESO coordination, to increase participation and deliver whole system benefits.
- Improving our flexibility processes and procuring at scale to improve market confidence.
- Utilising innovation to address the specific needs of our communities.



Collaboration

- Worked with Open Networks to develop standardised products with other DSOs.
- Partnered with NESO on standard products, and common metrics.
- Innovated with partners on LV flexibility.
- Engaged with housing associations on flexibility via the SFHA Trade Body.
- Consulted consumer bodies on HomeFlex (e.g. CSE).
- Worked with the Transmission Operator and the Greater London Authority on T/D limits and access products.

Outcomes

- 75MVA of connections accelerated.
- 899MW of capacity with potential to access wholesale (including NESO) markets.
- 66% Utilisation of contracted flexibility.
- £180,345 spent with flexibility providers.
- 11 agreements with nine providers.
- 8 technology-types contracts.
- 11 aggregators and suppliers registered on HOMEFlex Code of Conduct during National Grid DFS.

Benefits

- **£44M** of avoided reinforcement across ED2.
- **750MW** of new connections offered early grid access.
- **£28m** in societal benefit from faster connections, access to flexibility markets and reduced carbon emissions.
- **£8.8m** for our domestic and microbusiness customers over the next five years from HOMEFlex.

STAKEHOLDER ENGAGEMENT

650

stakeholders directly engaged with

46

events held



Typical attendees included:

- DER Customers.
- Suppliers.
- Flexibility Market Participants.
- Consultants.

Insights	Action
Need confidence in our end-to-end process as a key prerequisite for facilitating market participation (<i>Flexibility webinars</i>).	We published our Flexibility Roadmap which outlines why and when we use flexibility as well as our plans for flexibility in the future.
Increased data sharing needed to drive reduced delays in delivery and to develop business cases for new energy assets at our flexibility data workshop (<i>flexibility providers bilaterals</i>).	We launched our data portal and have shared a data roadmap committing to sharing more and more open data for use by our stakeholders.
Want clarity and coordination on the compatibility of different flexibility opportunities (<i>multiple stakeholders, multiple channels</i>).	We engaged with the NESO to ensure the use of standardised products and promote non-exclusivity.
Need confidence in our ability to manage large volumes of trade as the market grows (<i>flexibility providers</i>).	We've simplified our contracting processes and engaged a new third-party market platform to enable higher volumes.

WHAT'S NEXT?

- Refine and develop our Flexibility Roadmap to ensure we optimise the full range flexibility services, access product and price signals.
- Developing and deploying LV products to resolve LV constraints with learnings from LEO-N and LMAs trials. Update to include our energy efficiency strategy.
- Continue our work with SSEN-T and NGET to maximise the use of flexibility to unlock transmission capacity and engage with SGN to develop off-grid gas solutions that support Island communities.
- Use our new third-party market platform to enable a greater variety of contract time frames (including shorter term procurement) and an enhanced customer experience.



Flexibility is key to how we quickly and efficiently release network capacity and accelerate the new connections.

We will continue to expand our toolbox of flexible options to widen participation, expanding our offering with the addition of LV products to increase market opportunities and leveraging the power of our new market platform to provide the optimal customer experience."

Melanie Bryce,
Head of Network and Market Development



USING FLEXIBILITY AS A TOOL TO CONNECT OUR CUSTOMERS FASTER

OUR ROAD MAP FORGES A CLEAR PATH FOR FLEXIBILITY



WHY IS THIS A PRIORITY?

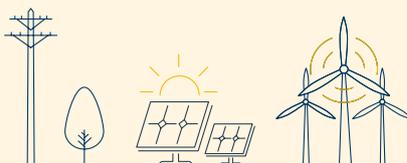
Flexibility is a key part of our net zero delivery strategy. Although network reinforcement will undoubtedly be required to meet the growth in connections and demand for LCT, flexibility is a key part of our DSO toolkit. It allows us to connect customers faster, make more efficient use of network capacity and reduce outages.

- Our connections pipeline already includes over **16GW** of generation and storage capacity – which already exceeds our ED2 2030 forecast of **13.6GW**.
- Our latest DFES forecasts a **13-fold** increase in both Heat Pumps and Battery Storage by 2030 and a **10-fold increase** in EVs by 2030.

Flexibility is key to enabling us to accommodate this growth as quickly as our customers and communities need it.

WHAT WE'VE DELIVERED

- We published our Flexibility Roadmap in March. This document sets out how we use flexibility to resolve a variety of network needs (accelerating connections, supporting resilience, deferring reinforcement and facilitating delivery).
- Created a DSO toolkit which is a combination of strategic investment, access products, flexibility services and price signals that facilitates a smarter grid.
- Our roadmap sets out how we expect our DSO toolkit and coordination with wider markets to evolve over ED2 as the policy landscape changes (e.g. new roles such as RESP and the market facilitator, half-hourly settlement, DUoS reform and REMA) and increasing LCT volumes.



2030 IS ALREADY HERE!

Technology	Distribution Generation	Battery Storage	Solar PV	Onshore Wind
2024 Pipeline	31GW	16GW	7.6GW	4.5GW
Uplift on ED2 forecast for 2030	284%	695%	168%	105%

COURSE CORRECTION

At the outset of our flexibility journey we felt that it was important to provide stakeholders with a single point of information in respect of their flexibility service requirements. Joining together with National Grid Electricity Distribution, Northern Powergrid, and Scottish Power Energy Networks we created a combined web offering for flexibility. It became apparent that stakeholders wanted far more functionality upfront, so we have now contracted with an established 3rd party platform to procure flexibility.

OUTCOMES AND BENEFITS DELIVERED?

- We've increased participation in our flexibility market.
- We've created better visibility of our products and services.
- We've accelerated connections.

NEXT STEPS

We'll continue to update our flexibility roadmap annually to capture new products and services, innovation that has transitioned to BAU, and changes in the policy landscape.

WE'RE CONNECTING CUSTOMERS FASTER WITH ACCESS PRODUCTS



WHY IS THIS A PRIORITY?

The West London area has seen an unprecedented number of applications for large scale connections, which has led to National Grid Transmission providing connection times into the 2030s.

WHAT WE'VE DELIVERED

Since initially rolling out the Ramping Solution for customers in 2023, enabling projects to connect and ramp their capacity up to 1MW per annum (to a maximum of 10MW) without triggering transmission upgrades, we've also:

- Accelerated the recruitment of aggregators and suppliers to provide domestic residential flexibility.
- Initiated a new procurement process in September 2023 to recruit market participants under an overarching agreement (See p.17 on market confidence), allowing for multiple agile bidding rounds. All contracts signed in February 2024.

- Partnered with NGET, NESO and the GLA, to enable developments in three London Boroughs (Hounslow, Hillingdon and Ealing) to apply ramping and flexibility to have their connection dates brought forward.

It's great to see our joint working with the electricity networks help unlock housing and net zero technologies across West London. The steps we've taken so far have connected nearly 8,000 new homes, with the solutions announced today helping to maintain the pace of delivery as we continue to build a better, greener and more prosperous London for everyone."

Jules Pipe,
London Deputy Mayor for Planning, Regeneration and Skills

NEXT STEPS

Work is now underway to understand the specific flexibility requirements for the five West London GSPs including time of day, volume, and location requirements. The release of bidding rounds is expected in April/May 2024 with contracts awarded in May/June 2024.

BENEFITS

Five-year GPV benefit breakdown



- **11%** Savings due to faster connections
- **73%** financial benefits from affordable housing – rent and ownership
- **16%** Affordable housing – social benefits

7800 homes to be built and connected in 12–18 months

Following a successful 'global call' that tested the market for flexibility and identified a potential of 59MVA in demand side response in West London, further successful tender activity has updated these estimates with at least 76MVA of flexibility expected from the five GSPs.



USING FLEXIBILITY AS A TOOL TO CONNECT OUR CUSTOMERS FASTER

WE'VE UNLOCKED CAPACITY THROUGH FLEXIBILITY

WHY IS THIS A PRIORITY?

Due to transmission network constraints, many customers are receiving connection dates in the 2030s. This is limiting access to flexibility markets and undermining the net zero transition. To help increase capacity, collaborative industry action through connections reform has brought about changes to how limits at the distribution/transmission interface can be managed.

We've utilised our new scope to manage flexibility at the distribution level and unlock over 7GW of capacity, with our new Connections Relationship Managers supporting customers throughout the process.

WHAT WE'VE DELIVERED

- The first tranche of revised offers was issued in December 2023 – releasing 2.5GW associated with 6 GSPs in our southern licence area. This has enabled accelerated timescales for 25 projects, including one offer to bring forward a connection by up to 13 years.
- A further 4.1GW is being unlocked through the second phase of offers this Spring.

The total of 7.1GW of unlocked capacity across licence areas in both England and Scotland could accommodate the equivalent capacity of 19 million domestic solar panels, or could generate enough electricity to power four million homes.



This is fantastic news and reflects the work we've done to build strong relationships with SSEN and to demonstrate why schemes like this are so important locally. This not only represents a big part of our climate emergency action plan, it also helps us generate income which we can invest back into providing services for our residents."

Stephen Conway,

Leader of Wokingham Borough Council on project being accelerated by 10 years



Connecting projects to our transmission network, and unlocking capacity at lower voltage distribution networks, is a massive priority for us, so it's great to see the progress being made by SSEN."

Paul Lowbridge,

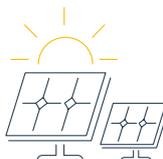
Head of Customer Management at National Grid

STAKEHOLDER FEEDBACK



The Technical Limits programme is all about maximising the availability of the networks that we have in place today, on the way to upgrading them to meet the needs of tomorrow... I'm glad to hear that several of the connections offered for solar installations so far this year have been curtailed by less than 5%. We hope to see many more come through in the coming months."

Chris Hewett,
Chief Executive of Solar Energy UK



BENEFITS

One-Year GPV benefit breakdown



- 99.8% Customer financial – faster connections and flex revenues
- 0.2% Environmental

NEXT STEPS

Following the successful introduction of revised offers in the SEPD region, offers relating to the 65 GSPs in SHEPD are now being issued to customers. This will make a further 500MW available to customers awaiting a connection.

DELIVERING WHOLE SYSTEM BENEFITS BY ENABLING WIDER MARKET ACCESS, THROUGH STANDARDISATION, COORDINATION AND STACKING

WE'VE DRIVEN WIDER MARKET PARTICIPATION

WHY IS THIS A PRIORITY?

We recognise that many flexibility providers need to access a wide range of revenue streams as part of their business models and the ESO markets are a key source of revenue for flexibility providers. We further know that;

- Standardisation of markets reduces barriers to market participation and improves liquidity.
- Coordination is key so that flexibility providers are able to connect to our network to enable wider system benefits.

WHAT WE'VE DELIVERED

We've committed to using standardised and non-exclusive products to enable wider market access and meet the needs of flexibility providers and connecting customers. Therefore:

- We're working with Open Networks to drive consistency across the DSOs.

- **Over 47%** of our flexibility products procured to date are standardised and non-exclusive.
- We're working with the ESO to codevelop a metric to track market participation.
- We have quarterly strategic bilaterals with ESO leaders, and weekly working level engagement with ESO and SPEN to support our Regional Development Programme.
- We've procured a third-party market platform which will support better coordination with the ESO and future market facilitator roles.

OUTCOMES AND BENEFITS DELIVERED

- Our SWANS project (in the south) has required significant coordination with the NESO allowed us to accept 3,784MW of offers through ANM systems avoiding transmission reinforcement. Our ICCP data link to SSEN Transmission allows us to exchange the necessary data with the NESO to facilitate this.

- We've transitioned all our flexibility providers to overarching agreements this year. This means they are contracted before they bid, so we can procure flexibility over much shorter timeframes. This also reduces their legal burden as they only need to contract once.
- We've worked with the ESO on CrowdFlex gathering the biggest data source to date on customer responses to whole system price signals. This will better inform how we coordinate with the ESO in future.

NEXT STEPS

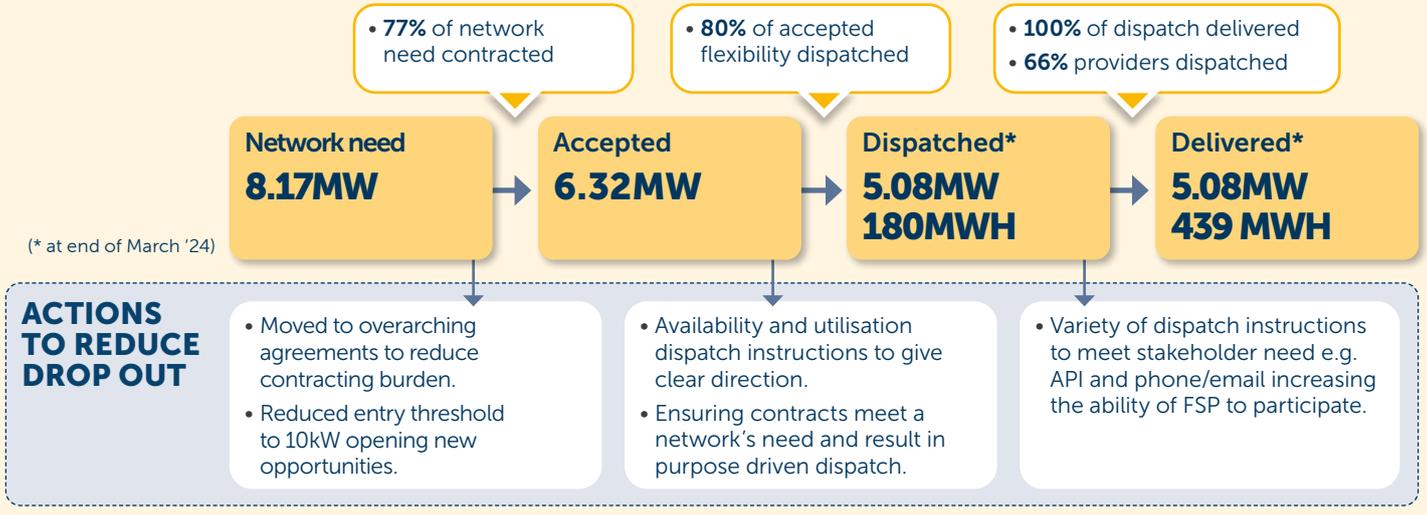
We will continue to drive wider market access through standardisation, coordination and measures that increase participation - working with the NESO, other DSOs and through Open Networks.



PROCURING FLEXIBILITY WITH PURPOSE TO RESOLVE SPECIFIC NEEDS AND IMPROVE MARKET CONFIDENCE

OUR 'SECURE' SERVICE GETS RESULTS

23/24 DEFERRED REINFORCEMENT THROUGH FLEXIBILITY



WE'VE IMPROVED MARKET CONFIDENCE



WHY IS THIS A PRIORITY?

In order to deploy flexibility at scale across all voltage levels (as per our strategy), market participants need to have confidence in flexibility as a viable business model.

We understand that a flexibility marketplace where participants are confident that they will be used and where further market opportunities are made available (see principle 2) will reinforce this confidence.

Through stakeholder feedback, we know the importance of reducing barriers to entry and improvement of the "conversion" through this process to ensure efficient markets.

This feedback was confirmed through feedback at our 'Flexibility and DER dispatches' roundtable in September 2023.



Great to see SSEN Distribution's Flexibility Roadmap... I particularly like their framework setting out how different flexibility tools (price signals, access products and flexibility services) are evolving based on market needs, in the context of the timeline determining the decision of use."

Amy Weltevreden,
Head of Flexibility Markey Strategy National Grid ESO

WHAT WE'VE DELIVERED?

- We've focused on engaging all types of flexibility service providers to understand their needs and improve conversion through this process (see secure product case study flow chart). We have 8x more technology types contracted demonstrating we have reduced barriers for entry and are now ready to scale these.
- In addition to our targeted procurement where we are focused on high utilisation of services, we also run "global calls" which have a different purpose. The "global calls" are focused on market discovery, so we are ready to apply a flexible solution in all cases.
- Through a regular programme of bilateral meetings with flex service providers, we gather honest feedback and take action immediately to reduce barriers and improve confidence.

OUTCOMES AND BENEFITS DELIVERED

- £44.03m of reinforcement identified to be efficiently met through flexibility; in our business plan we set a target of £32m.
- This year we have released capacity through flexibility to give a marginal (in year) **benefit of £266K**.
- Total **£180,345** spent with flexibility providers.
- 11** overarching agreements across **nine** Providers.
- Eight** technology types contracted.

NEXT STEPS

- Implement our new third party market platform (live June 24) to reduce barriers to participation and enhance our flexibility customer experience.
- Continued stakeholder engagement through one to ones, our global call, events and webinars to inform targeted procurement and increase scale across all of our technology types.

ExtenDER – CREATING CAPACITY WITH DEMAND TURN-DOWN



- ExtenDER is trialing a new 'market-based connections agreement' that will facilitate peer-to-peer markets, allowing existing connections to trade capacity.
- In partnership with Electron and Baringa we are co-developing the proposed connections product and market design with stakeholders and customising our approach to maximise market participation.

- We're currently finalising market design for a six-month trial starting September 2024.
- This initiative will generate new financial opportunities for industrial and commercial customers and potentially create additional capacity on areas of the network that are experiencing high demand growth such as West London.



PROCURING FLEXIBILITY WITH PURPOSE TO RESOLVE SPECIFIC NEEDS AND IMPROVE MARKET CONFIDENCE

OUR TAILORED FLEX PRODUCTS MEET LOCAL NEEDS



WHY IS THIS A PRIORITY?

Standardisation is key to enabling wider market access, but in addition, we're also focused on **purposeful procurement** to deliver targeted network needs.

📄 See market confidence p.17

This means that when we identify a specific network need that cannot be met, we develop a tailored product to address that. Our Load Managed Areas (LMAs) are a key example of this.

WHAT WE'VE DELIVERED

The project has assessed the LMA areas to understand which have network headroom, and which will require flexibility, to enable the removal of the LMA signal.

Stakeholder workshops have investigated potential commercial products, including a dynamic constraint signal and a 'diversity-as-a-service' incentive.

Learnings from this project will also inform new LV products for the wider network.

We've also held workshops with stakeholders that include DESNZ, OVO, Octopus, EDF Energy, Community Energy Scotland, EnergyUK and Baringa to help us review current flexibility products and evolve future product design.

OUTCOMES AND BENEFITS DELIVERED

The project is in a design phase, targeting development of new flexibility products to target LV network needs, and will be used to inform future LV products (see principle 4).

NEXT STEPS

The project is in a design phase, targeting development of new flexibility products to target LV network needs, and will be used to inform future LV products.



WE'RE DEVELOPING LV FLEXIBILITY



WHY IS THIS A PRIORITY?

Whilst our ED2 plan forecasted a five-fold increase in load-related reinforcement, new DFES forecasts show that LCT uptake in the next few years far exceeds the forecasts on which our ED2 plan was originally developed. Without flexibility this would require extensive reinforcement even beyond our original plan.

- **Deploying LV flexibility at scale by Y3/4 of ED2 is a key part of our strategy to enable LCTs, reduce reinforcement and customer disruption.** (We already procure LV flexibility, but this is currently used to solve HV/EHV network needs).
- We know that flex services at LV level require a different approach to higher voltages. Domestic and SME customers need to be involved, which requires attractive customer propositions, aggregation of high numbers of customers, and different dispatch confidence as customers are using their LCTs for other things beyond offering flexibility services.

WHAT WE'VE DELIVERED

In order to develop a different and specific approach for LV flex services, we've focused on:

- Investing in understanding our LV network in close to real time (see network visibility story) and sharing this data to drive coordination.
- Our TRANSITION project – to help us understand the needs of FSP and customers through trialling flexibility tools, platforms and services to delivery flexibility at the grid edge. This completed in September 2023 and we've continued to embed this learning in our BAU activities (such as our improved flex procurement approach, network model and LV monitoring).

- We're engaging housing associations and the Greater London Authority to define an energy efficiency flexibility service.
- We're investing in a new third party market platform to enable us to procure LV flexibility at scale (through our new overarching agreements and shorter term procurement).
- Applying our learnings from LMAs (see story in column one of this page) to apply lessons for LV products for all LV areas.

OUTCOMES AND BENEFITS DELIVERED

- Priming LV connected flex market through CMZ tenders.
- Stakeholder and evidence-led design of new LV flexibility for LV constraints.
- Supporting innovation and coordination through the sharing of granular LV data.

📄 See p.11

NEXT STEPS

- Developing and deploying LV products to resolve LV constraints with learnings from LEO-N and LMAs from Winter 24/25.
- Energy efficiency strategy coming in Y2 (as set out in our flex roadmap), building a consortium of stakeholders to develop these inclusive products.
- Collaborate with local energy, housing and energy management specialists through the Local Energy Market Alliance.



OCTOPUS – MARKET SIMULATIONS FOR LV FLEX



Our Load Managed Areas (LMA) project is currently working with stakeholders to define and trial Demand Diversification Services to provide flexibility at LV. Our aim is to provide incentives for FSPs (suppliers and aggregators) to diversify the demands of their customers from times of peak demand on the network.

Our Market Simulation workshops brought together suppliers and aggregators like Octopus Energy, other DNOs, regulators and consumer advocates to evaluate the

feasibility of using real-time network utilisation data to enable them to optimise the schedule of loads such as EVs and storage heaters.

NEXT STEPS

- To identify areas where services are likely to be required, through complex analysis of network constraints now and in the future.
- Commercial Trials planned for Winter 24/25.

COMMITMENT TO A JUST AND FAIR ENERGY TRANSITION AND CO-CREATING INCLUSIVE LV FLEXIBILITY PRODUCTS WITH OUR STAKEHOLDERS

WE'VE CHAMPIONED A JUST AND FAIR TRANSITION

WHY IS THIS A PRIORITY?

In March 2023, we became the first DNO to publish our distribution-focussed Just Transition Strategy "A Fair Energy Future" setting out our public commitment to tackle existing inequalities that undermine efforts to decarbonise, as well as new inequalities that could be created through the transition to net zero.

In March 2024 our refreshed Consumer Vulnerability Strategy detailed our commitments to delivering against these ambitions. In addition to PSR service provision, this year this included the need to drive fairness in the uptake of low carbon technologies, and the key role that DNOs play in this.

This is particularly important for LV flexibility as this is where domestic customers will be most impacted.



We are investing in innovation to support our long-term strategy in this area. Our **Equal LCT** project (started in January 2024) is focused on enabling access to LCTs and energy efficiency for consumers that would otherwise be left behind in the energy transition. This project has mobilised a consortium of stakeholders (green finance, energy suppliers, consumer representatives) to identify communities and customers with the least support and develop viable commercial models for LCT access.

OUTCOMES AND BENEFITS DELIVERED

- 11 aggregators and suppliers registered to protect consumers through signing the HOMEflex code of conduct during the National Grid DFS 23/24. This presents 40% of the participants and includes British Gas, OVO, Equiwatt and Good Energy.
- We've mobilised a consortium of energy suppliers, green banks, and consumer bodies (Energy Savings Trust, Citizens Advice) to help inform the design of inclusive LV products and services.



The ADE is delighted to support the HOMEflex project, through our involvement with the Code of Conduct and Compliance Scheme, Flex Assure. Domestic flexibility has proven to be crucial already these past two winters and will continue to be an important part of reducing costs and increasing security on our journey to net zero."

Caroline Bragg,
ADE Interim CEO



We know that disadvantaged households stand to gain the most from opportunities that the net zero transition will create, therefore we're thrilled with what HOMEflex has delivered in the drive towards a fairer, accessible service for customers."

Simon O'Loughlin,
Project Manager – HOMEflex



WHAT WE'VE DELIVERED



The HOMEflex project ensures the domestic flexibility market is inclusive, fair, and transparent, with clear lines of accountability through the development of a conduct code that protects customers.

We've developed the HomeFlex code of conduct in partnership with Flex Assure and the Association for Distributed Energy. We defined common standards of practice for FPS's to use when explaining flexibility products to domestic customer and microbusinesses to ensure that they had all the information they need.

BENEFITS

Five-year GPV benefit breakdown



- **9%** Educate customers about benefits of smart networks
- **91%** Customers feel in better control of their lives

NEXT STEPS

- HOMEflex Code of Conduct to evolve from a voluntary code with open entry to a membership base model where suppliers/aggregators will provide evidence of on going commitment.
- Our PCNZ Fund will continue to deliver LCT roll out to support customers, informed by our energy efficiency strategy and innovation findings in Year 2.
- Use the findings from Equal LCT to inform LV flex development in Year 2.

LEO-NEIGHBOURHOODS

LEO-Neighbourhoods is building on learning from Local Energy Oxfordshire to explore how a new role of a "Grid-Edge Coordinator", enabled by a digital LAEP platform, can accelerate community decarbonisation by:

- Creating Community Action Plans.
- Developing local decarbonisation projects.
- Enabling local balancing through Smart Community Energy Schemes, and
- Joining up neighbourhood level action with strategic planning.

It aims to enable fair, participative, and efficient decarbonisation at the grid edge, where energy is used by households and businesses.



POWERING CUSTOMERS TO NET ZERO (PCNZ) FUND

Building on the successful Resilient Communities Fund which ran from 2015-23, in the ED2 price control period we're distributing £2.5m through our 'Powering Communities to Net Zero' fund to support 640,000 customers through LCT accessibility initiatives for those in vulnerable situations, and community-led environmental and resilience schemes. The scope of the fund has deliberately been widened to recognise emerging challenges around the adoption of LCTs. The criterion for applying will be confirmed by our DSO Advisory Boards and PCNZ Group, following initial engagement with stakeholders this summer.



£2.5M
in grant funding



Options assessment and conflicts of interest mitigation

We're ensuring transparency in our forecasting and strategic planning processes, keeping local needs in mind, by:

- Proactively and efficiently planning long term future investments that will deliver our Net Zero Ambitions. [p.21](#)
- Making decisions in an open and transparent way that considers the needs of stakeholders. [p.23](#)
- We are engaging with local communities to help us understand the future needs of the network. [p.25](#)

OPTIONS ASSESSMENT AND CONFLICT OF INTEREST MITIGATION

Our refreshed DSO Strategy sets out our commitment to drive transparency in our decision making and build customer trust.

We've done this by publishing our planning and operations decision-making processes and report on our decisions on a regular basis, provide sector leading support for communities to enable whole system solutions and deliver strategic investment to release network capacity faster to avoid unnecessary delays and costs.

Our initiatives this year included:

- Evolving our methodologies for assessing network needs to enable faster connections, demonstrate how we manage conflicts of interest and provide transparency.
- Publishing our decisions to show our plans for addressing network needs.
- Offering support to all our local authorities with the development of LAEPs.
- Building new capabilities in our teams to support our communities in the transition to net zero.



Collaboration

- Working with local authorities to deliver regional and local area energy plans.
- Enhancing our DFES with Regen by consulting Large Energy users.
- Partnering with SGN to strengthen local authority engagement and whole system planning.
- Developing options for resolving network constraints with Transmission Operators in the North and South.
- Hosting roadshows for connection customers and LAEPs with NGET, ESC, Scottish Futures Trust, and Sustainability Scotland Network.
- Engaging the Society of Local Authority Chief Executives and Senior Managers (SOLACE) with SPEN.
- Leading the Planning and Network Development working group for Open Networks.

STAKEHOLDER ENGAGEMENT

1,603 stakeholders directly engaged with

169 events held



Typical attendees included:

- Local authorities.
- DER.
- Consumer and community interests.
- Industrial/Commercial.

Insights	Action
We must consider the broader benefits of network investment (<i>Multiple stakeholders</i>).	We enhanced our cost-benefit analysis to consider the wider socio-economic benefits that can arise from network interventions.
Want greater openness and transparency when evaluating network needs (<i>Scottish Islands Whole System webinars</i>).	We consulted on our DNOA process and published the outcomes of decisions as well as using an independent third-party to produce load growth evidence studies.
There is a need for the ability to assess network options holistically (<i>Local authorities – LAEP bilaterals</i>).	We updated our DNOA methodology to give clear insight and description of the factors influencing a decision as well as outlining all the credible options.

Outcomes

- Five net zero strategic plans published.
- 38 local authorities input to our DFES/GSP strategies.
- Appointed 12 Net Zero Advisors to support the development of Local Area Energy Plans (LAEPs).
- 18 DNOA outcome reports published.
- LENZA offered to all our local authorities.

Benefits

- Unlocking up to **10% reduction in time to connect** for new customers and reducing network costs by up to **£568m**.
- **£101m** in societal benefit driven by financial savings to local authorities from LAEPs, and improvements in air quality, carbon reduction and fuel poverty.

WHAT'S NEXT?

- Evolving our DFES methodology to support a just transition and include the latest products from our flexibility roadmap. Further grow stakeholder insight through our Net Zero Engagement Specialists team and LENZA tooling.
- Collaborate with our local authorities and, Energy Systems Catapult and Scottish Futures Trust to further build their LAEPs and evolution of LHEES.
- Support the development of the newly formed RESP and align our DNOA and planning processes.
- Share learnings from our DNOA methodology with other DNOs to drive best practice.



Active and extensive engagement with our communities, local authorities, stakeholders, and Whole System partners allows us to select the right network options transparently and confidently. In the coming year we will focus on supporting the development of LAEPs and the implementation of LHEES refining our LENZA tool to ensure the best outcomes for all."

Andrew Wainwright,
Whole Systems
Manager



EFFICIENTLY RELEASING CAPACITY TO MEET THE LONG-TERM ENERGY NEEDS OF OUR COMMUNITIES

WE'RE DRIVING STRATEGIC PLANS TO DELIVER LOCAL NET ZERO AMBITIONS



WHY IS THIS A PRIORITY?

To provide efficient capacity on the network to deliver net zero, while retaining a clear focus on safety and reliability, we must examine network needs over the long-term. When developing our Net Zero Strategic Planning process, we've considered three factors:

- Stakeholder collaboration and partnerships to ensure the network develops to meet customer needs of today and tomorrow.
- Ensure the appropriate use of flexibility services to deliver efficient whole system solutions at the optimum time.
- Consider future investment needs at all voltage levels with the appropriate processes at HV and LV.

This approach is not about building the network we need in 2050 right now, it's focused on ensuring that we understand and can work towards the necessary milestones in the most efficient way.

WHAT WE'VE DELIVERED

Our strategic planning approach builds on current processes of taking a long-term view of future system needs; and developing proposals for future investments where it is evidenced to 2050.

The process consists of the four stages as outlined in our [DNOA methodology](#).



OUTCOMES AND BENEFITS DELIVERED

- Investing strategically could result in a **10% time reduction to connect** for new customers and deliver up to £568m in societal benefit by 2030, detailed in NERA analysis.
- We shared and engaged on our strategic planning process with stakeholders during the Future Networks conference.
- We're prioritising the publication of the plans based on existing opportunities for whole system planning, starting with the Outer Hebrides, Ealing and Isle of Wight.

 *Having a clear vision to 2050 means we can work closely with our communities to deliver efficient, long-term solutions that meet their ambitions. So this year we've developed our approach and built new tools to facilitate more informed, stakeholder-led decision making."*

Clothilde Cantegreil,
Head of Strategy



NEXT STEPS

- We're evolving our methodology to consider flexible curtailment and energy efficiency options and carry out needs case analysis for all DFES scenarios.
- We're testing our new strategic CBA, with a view to rolling it out later in 2024.
- We're sharing our DNOA methodology and new CBA tool through the ENA open networks working group.
- We'll publish our net zero plans for all GSPs through ED2.

TOOLS THAT ENABLE STRATEGIC PLANNING

We use different tools and processes to assess alternative options to conventional reinforcement and resolve our network needs. The results are published in our DNOA outcomes.

This year, alongside increasing our capability to use these tools, we've developed a new strategic CBA tool to support more sophisticated future modelling and decision-making.

Tool	Purpose
Ofgem CBA	Used to develop various reinforcement options, this enables the assessment of different options for a single deterministic pathway.
CEM Tool	Used to assess the deferral of conventional reinforcement through the procurement of flexibility services. This examines other variants, including Active Network Management and energy efficiency.
Whole Systems CBA	Used to account for all network and societal actors, this enables coordinated works with other utilities (e.g. water, gas) to minimise cost and disruption.
Strategic CBA 	This new tool and methodology builds on the ENA's Whole System CBA. It considers additional costs and benefits associated with the economic value of strategic development, in line with work we've done with NERA. The aim is for it to be deployed wherever a strategic option (delivering capacity beyond or ahead of the immediate network need) is considered.

PEOPLE THAT ENABLE STRATEGIC PLANNING



Why is this a priority?

A highly capable strategic planning function enables us to identify potential investment opportunities early and fully consider all ways to deliver network needs most efficiently and effectively.

A key component of this, is attracting and retaining talent, including the necessary number of power systems analysts to service the business.

What have we done?

Alongside building new tools and processes, we've increased our DSO team by 40% to help build the necessary capabilities to deliver our DSO vision.

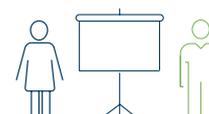
To tackle the skills constraint in system planning, we've partnered with Oxford University to fast-track newly qualified engineers, mathematicians and scientists into power system analysts roles.

Outcomes

Of our 40 new team members, we have 26 new power systems analysts from this initiative.

Next steps

Electric Network Planning Engineer apprenticeships with Loughborough University in 24/25.



EFFICIENTLY RELEASING CAPACITY TO MEET THE LONG-TERM NEEDS AND ENABLE THE DELIVERY OF NET ZERO

OUR WHOLE SYSTEM OPTIONS ASSESSMENTS CONSULT WIDELY

COLLABORATING WITH TRANSMISSION NETWORK OPERATORS



Throughout this year we've continued to proactively drive our working relationship with transmission network companies to develop and assess cross-sector options to resolve network needs. This engagement has been carried out across our two licence areas:

- **Collaborated with NGET** to pilot innovative solutions that deliver benefits including faster connections for customers in West London. These benefits are also being rolled out to additional areas such as Wokingham and Reading, as well as to customers with strategically important connections.



- **Worked with SHE-T** to coordinate immediate solutions and on longer-term investment works for the Scottish Isles. This engagement has enabled us to develop the right solutions for our network and save customers **almost £100m** as evidenced in the EJPs submitted to Ofgem for HOWSUM.



TRANSMISSION

NEXT STEPS

- Continue formalised and transparent engagement with SSEN-T and NGET for planning.
- Widen collaboration with other DSOs and the NESO (where appropriate) to develop smart, economic and efficient solutions that will help us (and others) deliver net zero.
- Further details on our how we will use flexibility to enable transmission capacity are on [p.16](#) (We've unlocked capacity through flexibility).

HEBRIDES AND ORKNEY WHOLE SYSTEM UNCERTAINTY MECHANISM (HOWSUM)



WHY IS THIS A PRIORITY?

We have a unique responsibility to serve the needs of customers across 59 inhabited Scottish islands via an extensive subsea network and Distributed Embedded Generation (DEG) stations.

The need to consider and balance both the current needs and future energy requirements of these communities formed an important component of our RIIO-ED2 business plan. We've therefore been working with the local community, stakeholders, and collaborating with other networks and the system operator to assess how we can best progress and connect large amounts of renewable generation, enable energy intensive users to decarbonise, and empower rural communities in the most cost-efficient way.

WHAT WE'VE DELIVERED

- We've now identified, assessed and selected network development options through a whole system lens to meet the energy needs of the community for achieving net zero by 2050.
- Our analysis has enabled us to consider potential collaborative interactions with transmission, the gas network, embedded generation, and potential future generators and demand.
- Through this process, we've identified over 23MW of community energy schemes currently operational in the Outer Hebrides who can provide flexibility services to defer potential investments or manage power cuts.
- Through the ongoing relationships with stakeholders we're able to monitor future requirements and build our network to facilitate new markets and technologies that will empower customers as they embark on their net zero journey.



Comhairle nan Eilean Siar takes a keen interest in the work of the Distribution System Operator.

Our distribution link is a lifeline connection for import and export and we enjoy a close relationship with DSO colleagues as, together, we strive to achieve the best level of electricity connectivity for our residents and businesses.

Over the past year, the DSO has consulted comprehensively on the HOWSUM proposals and concerns raised by the community have been readily taken on board and acted upon. SSEN's responsiveness in this matter is deeply appreciated in the affected communities and the Comhairle looks forward to a continued, excellent relationship with our regional DSO."

John Cunningham,
Comhairle nan Eilean Siar



Regen's work with SSEN for the Scottish Islands aims to unlock and deliver investment in the network to both facilitate new generation and support future increased electricity demand for residents, businesses and island industries. The meaningful local engagement with a range of parties across these islands has been key to unlocking this net zero opportunity."

The meaningful local engagement with a range of parties across these islands has been key to unlocking this net zero opportunity."

Becky Fowell,
Energy Market Analyst, REGEN

NEXT STEPS

- We're continuing to broaden our whole system options for these Island communities, with a particular focus on engaging with SGN to develop off grid gas solutions.
- Through our work with local authorities and LENZA tool [\(See p.25\)](#) we're enabling market actors to feed into our Distribution Future Energy Scenarios (DFES).
- We're also exploring additional avenues to enable market actors to feed into our wider planning process, helping us to develop more granular and sophisticated options for future HOWSUM submissions.



MAKING DECISIONS IN AN OPEN AND TRANSPARENT WAY THAT CONSIDERS THE NEEDS OF OUR STAKEHOLDERS

OUR GOVERNANCE ASSURES TRANSPARENCY AND NEUTRALITY



Our governance arrangements embody our Smart, Fair, Now approach. Ensuring transparent, unbiased actions to efficiently accelerate towards net zero.

We believe that close working between DSO and DNO teams is critical to achieving net zero more efficiently.

Under our governance model, the DNO and DSO functions are part of the same organisation, but stricter functional separation rules and measures are in place to mitigate any bias for asset ownership. Our integrated DSO business model enables us to operate more efficiently and to deliver our connections pipeline and LCT uptake more quickly.

We recognise the need to make our decision-making processes transparent to stakeholders; so we've published and consulted on our methodologies for avoiding conflict of interest and providing transparency in our decision making both in network planning (DNOA) and operations (Control room vision and ODM).

[See p.24 and p.27](#)

The diagram on the right illustrates our governance model to ensure transparency across all our activities, our decision-making governance, external assurance, interactions with the DNO, and ownership of key processes. This model sets clear boundaries to avoid conflicts of interest, whilst preventing the loss of synergies that would be caused by more severe business separation.

The DSO Steering Committee (DSO SteerCo) is a subcommittee of the Distribution Executive chaired by the DSO Director to ensure our DSO decisions have executive level accountability and board level visibility. The DSO SteerCo sets strategic direction, reviews and adjusts our plans to ensure we meet stakeholder needs. It agrees and monitors actions to build our DSO capabilities, solutions and coordination. It governs DSO/DNO conflict-of-interest mitigation and ensures that competition is facilitated.

Our DNOA decisions are independently assured by a separate professional engineering services organisation to ensure our decisions are free of bias. Our independent DSO Advisory Board reviews the findings of this assurance work.

Stakeholder feedback is baked into the design and review of key processes such as DNOA, ODM and Flex Roadmap and is actively assisted through data and insights such as LENZA and our real-time operational data. Insight is gathered through formal consultations, bilateral conversation and day-to-day interactions and used to refine and update our activities.

A note from our DSO Advisory Board Chair



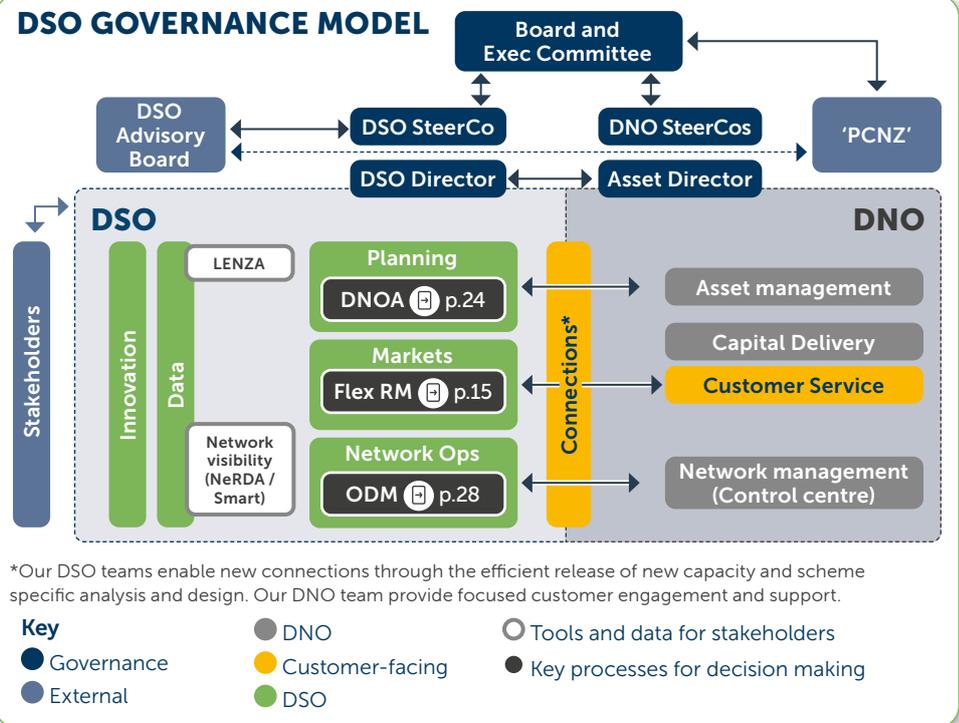
As Chair of the DSO Advisory Board, it's my role to ensure we critically evaluate plans and methodologies, with the interests of SSEN's stakeholders at the front of minds, and with the framework of the four DSO strategic commitments framing our critical challenge.

I work with the DSO team at SSEN Distribution. But I don't work for them. I work for you – SSEN's customers, communities, and stakeholders. I'll be pushing the DSO team to go further – and faster – in pursuit of what's in your best interests.

Gareth Miller,
DSO Advisory Board Chair SSEN Distribution



DSO GOVERNANCE MODEL



INDEPENDENT ADVISORY

- Our DSO Advisory Board has oversight of the transparency and coordination of our DSO actions and critically assures methodologies, decisions and approaches adopted by us as we implement our DSO strategy. The DSO Advisory Board was competitively selected from over 300 applicants to ensure a diverse set of insights and expertise mindful of our wide variety of stakeholders and customers we serve.
- Performing a similar function, the separate Powering Customers to Net Zero (PCNZ) Advisory Board provides independent stakeholder and customer insight in support of the DNO activities at SSEN.

[See the Board members here](#)



Our analysis suggests the most cost-beneficial solution is DNO-DSO integration. However, clear rules and measures to ensure functional separation, alongside the regulatory mechanisms currently in place, will help mitigate conflicts of interest. This less disruptive approach gives DERs greater confidence in flexibility markets without the loss of DNO management time and duplication of overhead costs that would be caused by more severe business separation."

Richard Druce,
Senior Managing Director NERA



MAKING DECISIONS IN AN OPEN AND TRANSPARENT WAY THAT CONSIDERS THE NEEDS OF OUR STAKEHOLDERS

OUR DISTRIBUTION NETWORK OPTIONS ASSESSMENT ADDRESSES CONFLICTS OF INTEREST



WHY IS THIS A PRIORITY?

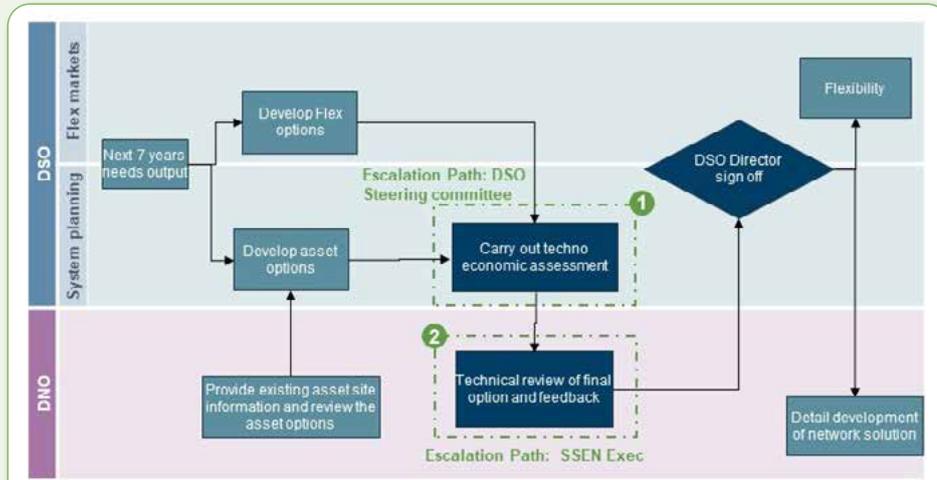
Under our governance model, with the distinct DSO / DNO functional separation, it's essential that we make sure rules and measures are put in place to mitigate any bias for asset ownership, and that they're transparent to our stakeholders and Ofgem. Our DNOA methodology clearly describes how options will be assessed to resolve network needs and is available to all stakeholders on our data portal.

The content has been developed and validated via stakeholder engagement, and aims to enhance industry transparency by outlining:

- How we work with stakeholders to understand our system needs and develop options.
- How we assess the costs and benefits of out options using established industry tools.
- How we will communicate the outputs of the DNOA with our stakeholders in a clear, accessible format to justify our approach.



WHAT WE HAVE DELIVERED?



OUTCOMES AND BENEFITS DELIVERED

- The outcomes of our options assessment are published quarterly in our DNOA outcomes report. We've published the outcome report for 18 of our schemes so far which have been chosen as areas of more immediate need and cover both our north of Scotland and central southern England licence areas. Whilst there is widespread coverage across our regions, there is a focus on West London reflecting the urgency of the need in this particular area.
- Our assessments identified that a significant proportion of needs can be met by flexibility services, particularly in the shorter term. The majority of cases where this is not possible relate to voltage or fault level needs where flexibility markets are less mature.
- The DNOA report demonstrates transparency, but also meaningfully empowers local decision making and the delivery of net zero. Access to this data helps strategic planning and new site development at optimal points on the network, providing relevant information for customers and local communities.

Resolution required when...	Escalation Path
...in developing options to resolve constraints, system planning and flexibility market functions have different views over the flexibility services solutions.	DSO Steering Committee
...in reviewing DSO's recommendations for constraints removal, the DNOA provides feedback on deliverability as well as operational and safety of the scheme and a common solution cannot be reached.	SSEN Executive through Director of DSO or DNO

The separation between our DNO and DSO roles for asset planning.

Strategic planning stage	DSO roles	DNO roles
Identifying future load-related system needs	Forecasting system needs	N/A
	Network visibility and open data	Provision of up-to-date network information
Developing options	Developing network flexibility solutions	Providing asset specific information and approving network solutions Approve operability of flexibility solutions
Assessing options	Technoeconomic assessment of flexibility and asset solutions	Providing unit costs for network solutions
Update plan and deliver	Managing flexibility contracting and market development	Detailed development and delivery of asset solutions

NEXT STEPS

- We will continue to incorporate stakeholder feedback and publish an annual update of our DNOA methodology.
- Remain vigilant in monitoring the industry in managing conflicts of interest, drawing insights from other DNO's, NESO and cross-vector stakeholders.
- Incorporate LAEP's into our DNOA process (see next story).

ENGAGING IN ACTIVITIES THAT WILL HELP US UNDERSTAND OUR NETWORK AND ITS FUTURE NEEDS

WE'RE WORKING IN PARTNERSHIP WITH LOCAL AUTHORITIES



WHY IS THIS A PRIORITY?

Local authorities are taking increased ownership for driving forward net zero on behalf of their communities, and we want to ensure our plans align with their local ambitions. Alongside meeting net zero goals, there's also huge societal benefits to be gained through enabling connections and capacity in a timely manner.

WHAT WE'VE DELIVERED AND HOW

- Restructured our Stakeholder Relations team so there's a specific focus on local authority needs and a single point of contact.
- Created a team of net zero specialists based across our licence areas who can build long-lasting relationships with the local authorities in their proximity and support their Local Area Energy Plans or Local Heat and Energy Efficiency Strategies (in Scotland).
- Created the LENZA tool (See p.12) and made it available to all our local authorities to help them develop robust Local Area Energy Plans (LAEPs) in a collaborative way.

OUTCOMES AND BENEFITS DELIVERED

- Engaged with every local authority across our two licence areas along with the organisations that support them such as the Net Zero Hubs, Scottish Futures Trust, and Energy Systems Catapult.
- Taken an active role in local authority strategic planning and climate committees, supplying forecast data and providing visibility of our network.
- Incorporated local authority development strategies in our network development plans to enable the delivery of local targets.
- Collaborated with local authorities to create strategic development plans for those areas of our network that have unique challenges such as West London, the Isle of Wight, and some of the Scottish islands.
- Seen 2/3 of the local authorities in our licence areas take the opportunity to use LENZA to develop their own LAEPs.

The Isle of Wight has clear ambitions to be a net zero island and we have been encouraged by SSEN's engagement and support for our plans. The partnership is helping address both short-term constraints and develop longer-term strategies to facilitate the transition to a low-carbon economy."

Lora Peacey Wilcox,
IoW Councillor and Cabinet Member



BENEFITS

One-year GPV benefit breakdown



- 82% Wider social benefits
- 18% Local authorities financial benefits

NEXT STEPS

Following the Local Authority Roadshows in Spring, in the summer we're collaborating with Energy Systems Catapult and Scottish Futures Trust to facilitate a further workshop for 8 Scottish local authorities and the Scottish Government, to further build their LAEPs and discuss how this is aligned to the evolution of LHEES.

OUR NET ZERO ADVISERS IN ACTION



Our new team of Net Zero Engagement Specialists have already made a significant impact. The dedicated team is working with local authorities to co-create solutions with the local authorities in our licence areas by providing regular input, network analysis, and 'Whole System' thinking to their net zero energy planning. Dorset local authority was one of the first to register for this service and they have been delighted with both the process and our new LENZA tool. (See p.12)



We've had an extremely busy year running events and working hand-in-hand with our local authorities to support them with their net zero planning. It's been so rewarding to be part of a team that's making a tangible difference, through the data and tools we're making available, and the dedicated 1-2-1 support that we provide."

Sarah Pearl,
Net Zero Engagement Specialist



WORKING WITH GAS



Collaborating with SGN, we carried out an engagement programme with local authorities, including bilaterals, roundtable discussions and a survey to understand their progress on decarbonisation and their attitudes to LAEPs.

A long list of "asks" emerged from the interviews and surveys but there was a clear consensus on the need for local authorities and networks to work together as partners.

As a result, in addition to the promotion of our data (portal) and tools (LENZA), we're further enhancing the support we provide. This includes embedding new Net Zero Engagement Specialists in different regions (aligned to RESPs) and extending our outreach work through the Roadshow programme – see below.

ROADSHOWS

Our Local Authority Road Shows, hosted in collaboration with the Scottish Future Trust, Energy System Catapult, and local Net Zero Hubs has helped us deliver even more support in a format that works for our stakeholder. In these we've:

- Demonstrated the digital tools available (including our LENZA tool) to support the development of their strategic plans,
- Facilitated networking with our staff, other local authorities and other key stakeholders,
- Gained even more understanding of how their community future energy requirements can inform our strategic plans so we can respond to local decarbonisation priorities.



The roadshow has been a great opportunity to get some expert insight on LAEPs from ESC, the Net Zero Hubs and SSEN. It has also been good to engage with other local authorities going through the same process. I've come away with a better understanding of how to approach our LAEP and the continued engagement and support from SSEN has been invaluable."

Jason Taylor,
Southampton City Council



ENGAGING IN ACTIVITIES THAT WILL HELP US UNDERSTAND OUR NETWORK AND ITS FUTURE NEEDS

WE'RE ENHANCING LOCAL DEMAND FORECASTS

WHY IS THIS A PRIORITY?

Complementing National Grid ESO's Future Energy Scenarios; our annual Distribution Future Energy Scenarios (DFES) set bottom up, local evidence-led projections which reflect the unique needs and development activities of our network regions. Through engaging with other network companies, our communities, and stakeholders we're now focused on making the data **fairer**, more **accessible**, and more **accurate**.

WHAT WE'VE DELIVERED

Increased accuracy

We have increased the scope of discussions that take place with our stakeholders to capture the full range of unique voices in our DFES engagement process.

In the north of Scotland, we held specific engagement events focused on the unique needs and aspirations of our island communities as well as engaging bilaterally with the distillery community and major ferry operators.

In the south of England, we widened our developer engagement to include emerging technologies (e.g. hydrogen electrolysis, liquid air energy storage, data centres) and worked with the Isle of Wight council and community to complete a net zero study for the island.

Improved accessibility

Our stakeholders have told us that DFES needs to be easier to understand for a broad range of users. We've created a bespoke data-visualisation tool for stakeholders to actively engage with the forecasts, and we've produced guides for local authorities so they can integrate DFES in their energy planning.

NEXT STEPS

- Using our new Net Zero Engagement Specialists to continuously engage with stakeholders and capture feedback to further iterate our data visualisation methods.

Greater fairness

Our **Vulnerability Future Energy Scenarios (VFES)** provides data and analysis to help us identify consumers in vulnerable positions, forecast how their needs may change and where additional network investment will be required should there be changes in LCT grants or support. This allows for fairer strategic investment decision-making.

NEXT STEPS

- Engaging with fuel poverty and justice-focused stakeholders. Including socioeconomic analysis within the DFES to understand how "fair" the assumptions are.
- Adapting scenarios to include stronger support for lower income households.

ENCOURAGING STRATEGIC COLLABORATION WITHIN INDUSTRY AND BEYOND

In the past year we've been delivering opportunities to both seek and share insights from key actors across the sector to drive improvements in the energy system.

OUR COLLABORATION PLAN

WHY IS THIS A PRIORITY?

This licence condition aims to provide a formalised plan that actively facilitates and provides specific detail on how we collaborate and partner with other stakeholders to co-develop strategic regional projects, plans and net zero strategies, whether led by ourselves or others.

WHAT WE'VE DELIVERED

- We were the first DNO to receive Ofgem's approval of our Data Privacy Plan to access and share smart meter half-hourly consumption data which significantly enhanced our network visibility and data sharing.
- We're facilitating other DNOs to make smart meter data interoperable so innovators and whole system actors can access data in the same way irrespective of the source DSO.

INTERNATIONAL KNOWLEDGE SHARING

WHY IS THIS A PRIORITY?

SSEN founded the **International Community for Local Smart Grids (ICLSG)** with Oxford University in recognition of the importance of collaboration and knowledge-sharing as we seek to promote, support and advance the critical role of smart grids and flexibility in securing a fair transition to net zero.

WHAT WE'VE DELIVERED

- This year knowledge exchange topics included; utilising smart meter data, strategic planning, DSO integration, network resilience, the LEAN systems approach and supporting vulnerable customers.
- In-depth learning has been shared on projects ranging from EV smart charging in New Zealand, Japanese microgrids, and Italian energy communities as a driving force for innovation and resilience, as well as from our own Project LEO.

SHARING LEARNINGS WITH TEPCO

ICLSG promotes the collaboration and exchange of ideas that can improve Distribution System Operation worldwide. Following a session on flexibility, where we shared our successes in managing the network and deferring reinforcement, we've hosted Japanese grid operator TEPCO to share our operational approach so they can adapt it for their own context.



TEPCO have started to discuss virtualising the grid with SSEN and other international partners. We learned lots of experience regarding DSO issues, the use of flexibility and its procedures including digital twins from SSEN."

Yoshiaki Kushima,
TEPCO





Distributed energy resources dispatch decision making framework

We're realising the value of flexibility through coordinated dispatch of flexibility, by:

- Being transparent in operational decision-making, processes and outcomes. p.28
- Providing timely visibility of DER from our market platform and ANM solutions. p.29
- Collaborating and coordinating with NESO and others to enable market access, interoperability and system integrity. p.30
- Working to support large scale implementation of Local Constraint Markets. p.30

Collaboration

- Our ODM was developed through open consultation and webinar and bilateral conversations including NESO.
- Working with DNO Control Room colleagues to draw on best practices, such as the Distribution System Access for Embedded Generation policy in the North of Scotland.
- Sharing best practice, two other DSOs have adopted similar frameworks following the publication of our ODM.

Outcomes

- 720MW operating envelope for Local Constraint Market distribution through agreed data exchanges and operating practices.
- £44m of network reinforcement deferred through dispatched and procured.
- 99% of DERs supported to reach full compliance with new standards.
- 20.3K near real-time and granular data points published as per p.10.

Benefits

- **899MW** (14.4%) increase in DER visibility for NESO.
- **477MW** of access products enabled through our SWANS ANM.
- **£21.1M** in savings for DER customers over the next five years through faster connections.

DER DISPATCH DECISION MAKING FRAMEWORK

Our refreshed DSO strategy reaffirms our commitment to uphold the highest standards of transparency and visibility in our dispatch reporting and decision making.

This year our approach takes in several perspectives, taking into account both short term and long term system needs. We've also focused on deepening and broadening our coordination and collaboration with customers, stakeholders and the ESO over the next three years.

Our initiatives this year included:

- Demonstrating how we make fair and efficient decisions for a resilient network when dispatching flexibility services.

- Publishing the outcomes of our decision making so that stakeholders can monitor performance and engage on future changes.
- Developing our vision for the Control Room of the future and our wider capability roadmap to streamline DNO-DSO interactions.

STAKEHOLDER ENGAGEMENT

428 stakeholders directly engaged with

34 events held



Typical attendees included:

- Flexibility Providers.
- Suppliers.
- DER.
- Large Energy Users.

Insights	Action
We must consider the broader benefits of network investment (<i>Multiple stakeholders</i>).	We enhanced our cost-benefit analysis to consider the wider socio-economic benefits that can arise from network interventions.
Want greater openness and transparency when evaluating network needs (<i>Scottish Islands Whole System webinars</i>).	We consulted on our DNOA process and published the outcomes of decisions as well as using an independent third-party to produce load growth evidence studies.

WHAT'S NEXT?

- Increasing operational data sharing with ESO.
- Extending co-creating operational practices between DNO, DSO, ESO and wholesale parties.
- Developing operational coordination as we refine our Control Room Vision.
- Evolve the next generation of operational platforms alongside our technology partners.



A smart, flexible energy system depends on coordination. Our Operational Decision-Making framework and Seasonal Operability Reporting efficiently and transparently combines flexible services and access products alongside outage management and essential, planned works. We're the first DNO to publish and consult to this level of detail and we look forward to implementing the control room vision to further develop our whole system thinking and coordination."

Nigel Bessant,
Head of Network Operations



SOCIETAL BENEFITS DELIVERED

£21.1M in benefit for DER customers over the next five years through savings due to faster connections.





BEING TRANSPARENT IN OUR OPERATIONAL DECISION MAKING, BOTH IN TERMS OF PROCESS AND REPORTING OUTCOMES

A ROBUST FRAMEWORK FOR DECISIONS ON DISPATCH



WHY IS THIS A PRIORITY?

We've intentionally maintained an integrated business model to maximise operational efficiencies. This approach necessitates a high level of transparency regarding our decision-making processes between the DSO and DNO.

By ensuring transparency, we are enabling stakeholders to have clear sight of our operational activities, to understand the available options and trade-offs and to participate in developing the decision-making process.

We're the **first DSO** to publish and consult on an extensive ODM framework which clearly sets out how we choose the best actions to take to maintain a safe and secure network and maximise whole system benefits, when coordinating Flexibility Services, Access Products and Outage Planning. This addresses specific feedback on a perceived lack of visibility of DSO/DNO operational decisions-making concerning the dispatch of flexibility and other services.

A key ambition for our ODM is to demonstrate how we enable flexibility [irrespective of the technology] to be considered alongside traditional options of planned outages or diesel standby generation.

How we make dispatch decisions



SEASONAL OPERABILITY REPORT



WHY IS THIS A PRIORITY?

The quarterly-published SOR creates visibility and transparency on actions taken by our teams to manage network events and subsequently the impact on our DER customers. For example, it provides visibility of the coordination actions taken to resolve the technical limits of a specific GSP.

WHAT WE'VE DELIVERED

- Implemented this report as a voluntary initiative evolved from best practice developed in our Control Room.
- This level of information, at this frequency and granularity, gives a quarterly view of where we've dispatched flexibility and where flexibility providers earn returns based on the flexibility services they've delivered.

OUTCOMES AND BENEFITS DELIVERED

As part of the SOR, there are published examples of how the ODM framework is applied and there are opportunities for stakeholders to feedback and co-create future versions of our ODM.



Our SOR is a brilliant first step in giving stakeholders visibility and transparency of how we apply our ODM principles. We're committed to improving it and love hearing what is most important to our customers in this space."

Deirdre MacDuff,
Network Access Manager



NEXT STEPS

- We'll continue to run webinars at regular intervals to enable discussion and challenge to our ODM. This is especially important as we onboard new flexibility providers.
- The outputs of our Seasonal Operability Report will help us identify if we need to review our ODM.
- We're exploring the opportunity to publish SOR data on our data portal to enable greater visibility of curtailment; for example, when they want to apply for a new connections.
- We'll use the NeRDA tool to publish our curtailment data on a monthly basis.

WHAT WE'VE DELIVERED

The ODM explains how carbon, cost and system resilience are considered alongside asset availability and suitability. It defines the information we use as input, how we engage with NESO and others to coordinate, optimise, and ensure compliance; and it defines how dispatch is realised through communication with the flexibility provider. For example:

- ANM customers can understand how they are dispatched to allow them to make informed decisions on their investments and how to operate their systems. They can stack services – how they can enter other markets, including NESO led markets, based on the way that they would be dispatched from either flex services or from ANM.
- For flex providers, they'll know when they would be dispatched under different system needs if they are awarded a contract. This is demonstrated via worked examples.
- The ODM framework was shared via a webinar where we worked through several real-world examples to provide guidance and create an opportunity for interested parties to provide feedback which was incorporated into our next iteration.
- Following our consultation on the draft methodology in March, we included guidance on how we share data and

information with flexibility providers and connected DER to improve accessibility for stakeholders. See [Data accessibility on p.13](#)



Creating a business case for new hydropower or indeed existing hydropower that will soon be removed from generation tariffs is difficult. Being able to stack DSO flexibility alongside broader market services will be key to creating a sustainable business case of Hydropower projects now and in the future."

Kate Gilmartin,
CEO of the British Hydropower Association

OUTCOMES AND BENEFITS DELIVERED

- Having visibility of our ODM increases market access. As an example, due to the ending of feed-in tariffs flexibility allows some projects that would not be financially viable to continue and ODM helps them to understand the forward business case.
- Flexibility serves a purpose in managing and operating our network, this is demonstrated by how we use our DSO toolkit, flex services, ANM and use of DER dispatch to manage, in normal operations and responding to outages. See [Flexibility roadmap on p.15](#)



CONTROL ROOM VISION



OPERATIONAL COORDINATION ACROSS NETWORK AND SYSTEMS INTERFACE

WHY IS THIS A PRIORITY?

Our DSO/DNO is an integrated model with functional separation between DSO and DNO roles, it's important our customers and stakeholders understand how our DSO and DNO functions work together today and how they will likely evolve in future. This helps transparency as well as encouraging innovation and optimisation of our operations.

WHAT WE'VE DELIVERED

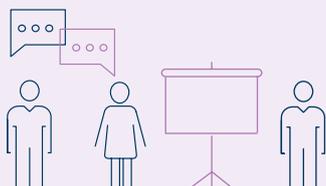
- Working with our DNO Control Room team, we created a series called "A day-in-the-life 2027" featuring key Control Room personas: Control Room Engineer, Flexibility Scheduling Engineer and Planning Engineer.
- Our Control Room vision is published on our DSO website and forms part of our wider capability roadmap, setting out how we are developing our DSO. This roadmap has been introduced to our DSO Advisory board and will form the basis of wider engagement an development through 2024–25.

OUTCOMES AND BENEFITS DELIVERED

The Control Room vision helps external stakeholders to understand the DSO/DNO interactions for decision making, as well as supporting SSEN capability build over ED2 to deliver flexibility at scale.

NEXT STEPS

- We'll continue to implement our Control Room vision – extend, evolve and formalise operational coordination across DNO, ESO and wholesale activities.
- We'll embed ODM practice and extend to wider aspects of DNO activities e.g. maintenance.
- We'll continue to engage on ODM and SOR and incorporate feedback into our approach.



WE HAVE TIMELY VISIBILITY OF DER FROM OUR MARKET PLATFORM AND ANM SOLUTIONS

WE'RE ENHANCING DER VISIBILITY



WHY IS THIS A PRIORITY?

The large and increasing volume of DER connected to our distribution network presents opportunities and challenges – it brings new participants offering flexibility services to help reduce costs for all customers, and also new levels of complex activity to be monitored and forecasted. It's important to understand the nature and behaviour of connected DER so we can better plan, operate and coordinate our activities.

As our Benefits Framework identifies, DER visibility is a key enabler for NESO wider system benefits and our work to improve DER Visibility supports NESO to maximise opportunity and maintain resilience. NESO have identified £110M benefits from access to distribution connected services across GB and the opportunity to reduce transmission constraint costs through ESO/TO/DSO coordination.

WHAT WE'VE DELIVERED

Public/Open visibility

We're the first DNO to publish extensive near-real-time and granular operational data to enable whole system coordination – [p.10](#). Our monthly publication of DER data across our network, through the Embedded Capacity Register (>50kW) and our SLC31E statements, details all flexible services dispatched. Available on our data portal these provide comprehensive detail on the extent and operation of DER on our networks.

Increased public visibility also drives internal benefits by driving consistent high availability data about our connected DER across our operational and planning teams to allow us to make better decisions.

NESO/Shared visibility

Our weekly 'risk-of-conflict' reporting identifies DER providing services to NESO which may be affected by DSO or DNO activities. In addition our ICCP link with the NESO, through our SWANs ANM system, increases visibility and operational coordination of DER in order to avoid transmission constraints.

Internal visibility

Our new flexibility market platform will increase the visibility of and access to DER services; and our ANM connected assets are registered in our ANM solution and made accessible to DNO control engineers through their normal PowerOn interface.

OUTCOMES AND BENEFITS DELIVERED

Increased visibility leads to better coordination across DER and FSP operators as well as the NESO. We've shared weekly risk-of-conflict reports in the past year, shared register details for 816MW of DER through our Embedded Capacity Register and made visible 721MW of capacity envelope to NESO's LCM.

NEXT STEPS

- We'll continue to promote access to our shared data exchange as set in our Data Roadmap.
- We'll be using NeRDA to publish monthly curtailment data in future.
- We'll explore opportunities to develop advanced data sharing to improve outage visibility with NESO.

ARCHITECTURE TO ENABLE FLEXIBLE OPERATIONS

We're extending our systems for operating flexible services and access management using service-orientated architecture to avoid single platform/vendor dependence. We use Flexible Power, alongside other DNOs, to ensure non-proprietary alignment. Through Open Networks, we're evaluating OpenADR 3.0.1 as the basis for a UK dispatch standard. ODM sets out our dispatch criteria to implement using configurable logic to avoid hardcoding.



This year the Open Networks' Settlement Technical Working Group has focused on creating a consistent, user-friendly end to end process for all FSP's regardless of the market they wish to participate. It has been my pleasure to chair this group and collaborate with other DNOs.

Gavin Stewart,
Flexible Solutions Manager





COLLABORATING AND COORDINATING TO ENABLE MARKET ACCESS, INTEROPERABILITY AND SYSTEM INTEGRITY

WE'RE DRIVING COORDINATION ACROSS INDUSTRY AND MARKETS



WHY IS THIS A PRIORITY?

We recognise the importance of enabling DER customers to access broader ESO markets in enabling business models for DER customers and reducing barriers to entry and improving market liquidity. Data sharing, coordination and visibility of the operational decisions between the DSO and NESO is essential to provide DER customers access to the ESO markets and provide the ESO opportunities to access DER flexibility.

WHAT WE'VE DELIVERED

This year, developing ANM systems, unlocking participation in LCM and driving standardisation have been our three areas of focus to promote NESO coordination, maximise participation and enhance markets and systems.

Standardisation

- We're actively involved in creating Industry wide engagement rules between NESO and DSO/DNO for the mitigation of technical conflict between NESO and DSO actions. We are implementing these rules through new practices such as Risk of Conflict reporting.
- We're also leading the Open Networks Settlement's Technical Working Group and are working with the Data Sharing workstream to standardise access to data to enable solutions as demonstrated through our SWANs ANM.

BENEFITS (SROI)

- Standardisation is key to increasing scalability and participation so that FSPs, system and hardware vendors and DNO/ DSO/NESO can interact in an efficient and repeatable manner.

Local Constraint Market (LCM)

The NESO have developed the local constraint market on the B6 boundary in Scotland, to manage the transmission constraints in that region utilising the increasing level of participants available.

To help scale this market and increase domestic and microbusiness participation we have worked extensively with NESO and SPEN to develop the data exchanges and process needed to ensure system-wide coordination and ensure planned and unplanned network changes are incorporated.

By providing visibility and communication of asset availability, the solution developed uses an innovative mechanism that identifies the ideal windows for coordination between DSO and DNO without requiring system integration.

BENEFITS (SROI)

- We're making 721MW of capacity envelopes available to NESO to increase DER and CER participation in LCM whilst maintaining a safe and secure network.
- Developing a repeatable template for applying for similar access to DER in other networks.

NEXT STEPS

- We'll build on our ICCP from SWANs and RDPs to enable broader data exchange on DER visibility and coordination.
- We'll scale up the data exchanged in support of LCM.
- We're exploring opportunities to develop advanced data sharing to improve outage visibility with NESO.

South West Active Network (SWANs)

The South West Active Network (SWAN) was developed to address the impacts of the increased DERs connected and connecting to the distribution network to the transmission network at certain GSPs.

Our wide area ANM system presents a T-D interface that facilitates the trimming/tripping of DERs to prevent faults on the transmission network. Since this ANM is only triggered at N-3 events, the DER customers connected to the relevant GSPs are rarely curtailed, which means they have a more secure access to wider markets.

This year we've commissioned our ICCP link and brought on the first 477 MW of DER. This same technology is also being employed to support our Technical Limits work to further increase connections in coordination with NESO.

BENEFITS (SROI)

- Our SWANs ANM system is connecting up to 1.8 GW in advance of transmission constraints by coordinating distribution access with available transmission capacity on real time.
- This ANM technology is the backbone of and ready to connect capacity through technical limits.

SUPPORTING OUR CUSTOMERS AND COORDINATING WITH NESO

WHY IS THIS A PRIORITY?

In 2019, Ofgem introduced the accelerated loss-of-mains change programme. It required all DER at 50kW or above to change their loss of mains protection settings to avoid future potential transmissions outages.

- Our active approach has exceeded the programme targets and avoided compliance action. Out of the thousands of DER we now only have 39 (<1%) sites left to reach full compliance – we aim to have all sites above 200kW compliant by April 2024.
- This programme ensures we are proactive in coordinating with the NESO to minimise the impact of outages on them from the DER assets on our network.



NATS is the UK's leading air navigation service provider, handling over 2 million flights each year from its two control centres, which are part of the UK Critical National Infrastructure. SSE collaborated closely with NATS to schedule, implement and test changes that would allow NATS to maintain compliance with G59/3-7 at their Hampshire location, whilst ensuring that risk to NATS service was minimised."

Chris Leeder,
Service Owner (Facilities), NATS





We're working hard to create the capacity our customers need to transition to net zero.

Over the past year, we have accelerated our DSO capabilities and used flexibility to enable faster connections and respond to immediate and emerging needs quickly and innovatively.

We are planning our networks for the long-term by taking the right steps now to proactively and efficiently release capacity by deploying our DSO toolkit of strategic investment, access products and flex services. We have focused on governance, decision-making and transparency mechanisms to act on the needs of customers, local authorities and LV network.

Our approach is to be pragmatic and purposeful to drive genuine customer benefit. Our actions are informed by insights and evidence, and we work to deliver benefits through collaboration. We empower our customers with tools and data to enable whole system coordination and wider access.

Finally, we hugely value the input our stakeholders provide on DSO so please sign up for our newsletter using the QR code on the right, or follow us using the links at the bottom of the page."

Andrew Roper,
Distribution System Operations Director, SSEN



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