DistributionSystemOperator

Distribution System Operation Performance Panel Submission

April 2024

DSO | nationalgrid

Contents

Executive summary

The UK electricity system is experiencing its most significant period of transformation in decades, with a national commitment to net zero by 2050 written into law and a target to decarbonise the grid by 2035.

This ambition to reach net zero is changing the way that electricity is generated and consumed at pace, with widespread renewable generation and adoption of low-carbon technologies (LCTs), such as heat pumps and electric vehicles.

At National Grid Electricity Distribution (NGED) we align to Ofgem's view that distribution networks are key to unlocking this transformation, and changes must be made to the way networks are planned and operated at the local level. We're fully committed to adapting to our changing customer needs, which is why we've established a functionally separate Distribution System Operator (DSO) in the first year of RIIO-ED2.

Whilst this is the first year of the DSO incentive, it is important to remember that our DSO has been delivering benefits to customers since 2016. At that stage we ran the first ever UK distribution flexibility trials. In the seven years that have followed, our DSO has spearheaded the creation of the Distribution Future Energy Scenarios (DFES), led the creation of flexibility markets via the Market Gateway, launched domestic flexibility trials, and deferred over £210m of reinforcement. At every stage of our DSO journey, we have shared and developed our learnings with industry peers, stakeholders, and customers, driving forward a DSO model that is open, collaborative and focused on maximum benefit to customers.

This submission summarises our progress across the three core DSO functions of flexibility market development, network operation, and planning and network development. We have structured our reporting in line with the five areas of focus set out by Ofgem, as shown in the contents.

We believe it is our consistent, enduring engagement that makes our DSO unique - involving stakeholders in everything we do from the very beginning, from building the first Market Gateway and issuing the first DFES, to co-creating our DSO vision and action plan over the past few months. The success of the DSO across all the functions and activities is underpinned by both this ongoing stakeholder engagement, and collaboration.

These areas have been a focus for us over the last year as we continue to develop a DSO that integrates with a broader system, whilst delivering services and activities that are important for our stakeholders. You'll see these three recurring themes throughout this document across the five sections that follow:

★ **Benefit or outcome for consumer or customer**

Stakeholder engagement

Collaboration

On DSO Benefits. Our DSO has been developed with customers and for customers. We have published our shared vision, strategic commitments and our action plan for the coming years. This has been done with consistent collaboration with customers, stakeholders, and industry peers, ensuring we never lose sight of the benefits DSO can and needs to deliver. We have also set out how we will measure and share benefits with stakeholders going forward.

On data. We make 96 data sets publicly available, which allows stakeholders to understand, and engage in our activities. Our data also supports stakeholders to deliver their own decarbonisation initiatives.

On flexibility markets. We've led the way on flexibility market development. Our unique Market Gateway platform makes it simpler and quicker for Flexibility Service Providers (FSPs) to register and participate in flexibility procurement. Our markets have grown exponentially under this framework: we now have more than 70,000 flexibility assets registered and pre-qualified. This section details the extensive stakeholder engagement we've done this year, both to support ongoing market participation, and at a strategic level to drive continuous improvement.

On options assessment and conflicts of interest. This year has seen extensive progress on the methods we use to forecast changes in generation and demand, and the way we consider options to manage network constraints. The proposed new set of network development methodologies on which we are consulting, will deliver significant improvements to system planning. As the first to publish a Distribution Network Options Assessment (DNOA), we've continued to improve and develop it in the latest iteration.

This section also describes the journey we are on in developing our governance structures and processes to manage potential conflicts. We've taken significant strides forward in establishing accountability at operational level between the DNO and DSO. We've articulated this to stakeholders with market-leading transparency by publishing our Guide to Governance with the DNO document. We've also established our independent DSO Panel, which will provide external scrutiny on our decisions and guide our future strategic approach.

On dispatch decisions. We have described our emerging decision making frameworks and how we are learning by doing. This section also describes how we are engaging stakeholders as we build our set of use cases highlighting and seeking views on the more challenging decisions we face. We're also leading by describing the split between DNO-DSO for dispatch in operational detail.

Timeline of DSO achievements 2023/24

April 2023

Flexibility Services Procurement Statement Published (Flexibility Market Development)

May 2023

New Registration Process for Flexibility Service Providers Introduced (Flexibility Market Development)

June 2023

Scope of DSO Policy Suite Published (Governance, Conflict of Interest)

July 2023

Market Gateway Launch (Flexibility Market Development)

Detailed Guidance to FSPs Published (Flexibility Market Development)

DSO Planning Policy Published (Governance, Conflict of Interest)

August 2023

PRIDE Innovation Project Launched (Planning and Network Development)

Open Networks Implementation (Network Operation)

September 2023

LV Insights Platform (Planning and Network Development)

10 GW Capacity Release (Network Operation)

Electricity Futures Series Launch Event (Stakeholder Engagement) (Conflict of Interest)

MW Dispatch Service Launch (Network Operation)

Sixth Distribution Network Options Assessment Published (Planning and Network Development)

October 2023

Electricity Futures Series, Supporting Regional Ambitions Event (Stakeholder Engagement) (Network Operation)

Whole System Headroom Project Initiated (Network Operation)

Clearviewconnect Report Published (Network Operation)

Stackability Report (Flexibility Market Development)

DSO Charter Published (Governance, Conflict of Interest)

DSO Dispatch/System Operation Policy Published (Governance, Conflict of Interest)

November 2023

December 2023

8th Distribution Future Energy Scenarios Published (Planning and Network Development)

January 2024

Improving Curtailment Consultation Published with UKPN (Network Operation)

Electricity Futures Series, Governance to Net Zero Event (Governance, Conflict of Interest) (Stakeholder Engagement)

February 2024

Flex in 5 Published (Flexibility Market Development)

7th DNOA Published (Planning and Network Development)

DSO Panel Launched (Governance, Conflict of Interest)

Guide to Governance Published (Governance, Conflict of Interest)

Local Authority Portal Launch (Planning and Network Development)

Piclo Partnership Announced (Flexibility Market Development)

LV Sustain Increased Scope to 176k Homes Announced (Flexibility Market Development)

March 2024

Electricity Futures Series, Ensuring Continued Success Event (Governance, Conflict of Interest) (Stakeholder Engagement)

Flexibility Service Selection Use Cases Published (Flexibility Market Development)

Strategic Action Plan Launched (Governance, Conflict of Interest)

Network Development Plan Consultation on New Methodology, Network Headroom Report, and Network Development Report (Planning and Network Development) (Stakeholder Engagement)

Engaging our customers and stakeholders

Effective customer and stakeholder engagement is paramount to being an effective DSO.

As this is our first full year as a functionally separate DSO, we knew it was important to focus on listening to our stakeholders, to fully understand what benefits they expect from a DSO.

We have embarked on an extensive programme of engagement with our customers and stakeholders, making sure that their voices are heard at every step of the way.

Our engagement has included large-scale events through our leading Electricity Futures DSO event series and targeted workshops focused on key areas of our DSO roles and responsibilities. We have also engaged directly to support specific customer and stakeholder needs, such as our Net Zero and Flexibility Surgeries.

This proactive approach has helped us understand the needs and preferences of our customers and stakeholders, guiding us in the development and delivery of tailored solutions.

While we have been refining the foundations of our DSO, we have been able to incorporate meaningful feedback from our stakeholders, promoting transparency and collaboration.

Through this extensive programme of engagement, we have been fostering a culture of collaboration, innovation, and responsiveness.

This is paving the way for a smart and flexible energy network that facilitates local decarbonisation for all customers and communities.

2023/24 stakeholder engagement at a glance

Engaged 338 stakeholders across 257 stakeholder organisations from across the whole energy system through our Electricity Futures DSO event series

Delivered 290 Net Zero Surgeries across our regions, with local authorities and other stakeholders involved in decarbonisation planning

Held 8 flexibility webinars and workshops, reaching more than **250** flexibility market stakeholders

Delivered 30 Flexibility Surgeries with prospective Flexibility Service Providers

Engaged over 250 stakeholders via our regional stakeholder webinars and workshops co-delivered with Regen to publish the 2023 DFES

Our DSO Charter and vision

Our vision is for the DSO to facilitate local decarbonisation for all customers and communities, at the right time and lowest cost. We aim to be fully transparent on how we are performing – we know from our engagement with stakeholders they expect this from us.

In September 2023, as part of the launch of our Electricity Futures DSO event series, we shared a draft DSO Charter with our stakeholders. During the event, we tested our DSO vision and strategic commitments with a broad and diverse range of 49 stakeholders including devolved and local government, flexibility market participants, energy generators and large energy users.

Building on the feedback we gathered, we published our revised DSO Charter in November 2023.

We engaged further with stakeholders throughout the rest of 2023 and into 2024, holding different stakeholder events, such as our 'Supporting Regional Ambitions' event which discussed how we support local authorities with their decarbonisation plans. We used feedback across these events to develop detailed actions to deliver our vision and strategic commitments. We set these out in our recently published Strategic Action Plan.

Our Strategic Action Plan established indicative Key Performance Indicators (KPIs) across the three core DSO roles and our strategic commitments. We have co-developed these KPIs with stakeholders. The table on pages 8-9 maps the indicative KPIs to outcomes and real world benefits that will be felt by consumers.

This table also includes our assessment of how we are performing against the recently established KPIs over the last year. We will continue to develop and define these benefits, with the support of our stakeholders over the coming months.

Delivery against our indicative KPIs in 2023/24

DSO Role	Performance Indicator	Current Performance	Related Outcome	Benefit	2023/24 supporting activity
Flexibility Market Development	Assets registered and pre-qualified on Market Gateway	70,000	Increased use of flexibility leading to deferral of net-work reinforcement	Reduced consumer bills	• Launched the Market Gateway platform which facilitates access to flexibility markets at scale • This has reduced barriers to entry for flexibility service providers (FSPs)
	Stakeholder feedback on our improved processes	TBC – awaiting stakeholder survey results	Increased use of flexibility leading to deferral of net-work reinforcement	Reduced consumer bills	• Implemented standardised contracts for market participation • Built functionality in Market Gateway to simplify the asset registration and pre-qualification process
	% of flexibility available vs. requested (our ability to dispatch the flexibility we need and tender for)	34.6%	Increased use of flexibility leading to deferral of net-work reinforcement	Reduced consumer bills	• Delivery of Market Gateway to provide digital visibility of controllable assets at tender stage • Overarching contract allowing efficient trading • Ongoing support to FSPs to encourage market participation
	Reinforcement investment deferred through targeted use of flexibility	£80m	Increased use of flexibility leading to deferral of net-work reinforcement	Reduced consumer bills	• £80m of network reinforcement deferral in the first year of RIIO-ED2 compared to a forecast of £94m across the whole price control
	Number of flexibility use cases where revenue stacking is not possible	TBC – once recommendations from stacking report agreed	Enabling flexibility service providers to stack revenue streams across multiple markets, leading to reduction in costs of services, lowering whole system costs	Reduced consumer bills	• Commissioned an independent study to build cross industry consensus on revenue stacking – discussion of recommendations is underway • Implemented changes to our procurement to support revenue stacking as detailed in section 3
	Volume of flexibility procured in our regions	17 GWh	Increased use of flexibility leading to deferral of network reinforcement	Reduced consumer bills	• Widened flexibility market access and therefore volumes, through the introduction of weekly short-term trades across 61 High Voltage locations
	Volume of domestic flexibility available to us through Market Gateway	166 MW of domestic assets registered on the Market Gateway	Increased use of flexibility leading to deferral of network reinforcement	Reduced consumer bills	• In 2023/24 1,200 domestic customers were contracted through our low-voltage ‘Sustain’ flexibility product • We also increased the availability of this product to 176,000 customers for Winter 2024/25
Network Operation	% of potentially conflicting decisions between NESO and DSOs which have an agreed process to manage them	<1% (2/2600)	A more coordinated approach to dispatch across national and local systems, lowering whole system costs	Reduced consumer bills	• Co-lead Primacy rules development in the Open Networks forum • Implemented agreed Primacy rules • Shared weekly risk of conflict report with the ESO
	Feedback received on our publications and regular engagement with stakeholders	TBC – awaiting stakeholder survey results	Understanding our stakeholders’ priorities in terms of how we operate the network, enables us to maximise the use of capacity and enable quicker connections to the network	Accelerated decarbonisation	• Engaged 241 stakeholders across two technical limits webinars. Conducted a webinar with 11 battery storage operators on the ENA’s three-point plan for connections reform
	Short-term (week ahead) load forecasting accuracy	To be baselined	Enhanced system modelling and shorter term operational forecasts help maximise utilisation of the existing network, thereby deferring network investment costs	Accelerated decarbonisation	• Working with the ESO and other network operators we have unlocked 10 GW of grid capacity to accelerate the connection of low carbon technologies on a non-firm basis. We have already accelerated 39 schemes totalling 1.4 GW
	Amount of curtailment avoided through enhanced outage planning processes	58 GWh	Improved operational forecasting and outage planning reduces the time that renewable generation is curtailed from operation, thereby resulting in carbon saving	Accelerated decarbonisation	• A total reduction in curtailment of renewable generation of 58 GWh up to March 2024. This reduction is against forecast curtailment which had been projected and advised to customers by the DNO. Resulted in carbon savings of 1,000 tons CO_2, based on assumed displacement of average carbon intensity of the GB electricity system =
	Percentage of flexibility dispatch decisions which are automated	To be baselined	Automated decision making, enabling faster and smarter operation of the network	Reduced consumer bills	• Established our Energy Management Centre (EMC) to support progress towards real-time operation of the network
Planning and Network Development	Percentage of outcomes in our annual investment report (DNOA) which recommend flexibility	22%	Increased use of flexibility leading to deferral of network reinforcement	Accelerated decarbonisation	• We have enhanced our engagement approach for our Distribution Future Energy Scenarios (DFES) to improve demand forecasting which is a key input to our DNOA: ○ Engagement of 250 stakeholders ○ Included 7,200 local authority strategic projects into our investment planning • We are consulting on updated network development plan methodologies which will improve our options assessment process
	Forecasting accuracy (percent-age error of load forecast across our substations for the year ahead)	11%	Increased forecasting accuracy allows us to better utilise the network resulting in a reduction of load related reinforcement – we have projected a saving of £59m on load related expenditure across the ED2 period	Reduced consumer bills	• We have installed monitoring at over 1,750 sites across the low-voltage network to improve visibility • We have estimated we will install a total of 15,500 monitoring sites by the end of ED2
	Percentage of local authorities in our licence area that we are supporting to create LAEPs and decarbonisation initiatives	93% (7% declined sup-port)	By working with more local stakeholders we are better informed on future network demand and can target future network investment in the right place and right time. We have enabled the connection of >52,000 electric vehicles and >11,000 heat pumps this year	Accelerated decarbonisation	• Delivered 290 Net Zero Surgeries across our region to support local planning, 230 with local authorities, 60 with other stakeholders • Supported the delivery of 13 LAEPs in South Wales • Proactively supported two large-scale regional decarbonisation initiatives that deliver whole system solutions (Bristol City Leap and UK Central Hub).

2.1 Data availability and access

NGED's Connected Data Portal (CDP) led the industry approach for publishing network data sets in one central location. The CDP hosts the raw data that supports the modelling and forecasting across the different DSO and DNO functions. As well as providing our internal evidence base, it is available to stakeholders to facilitate their understanding of and engagement in DSO processes.

The platform provides a webpage user interface and Application Programming Interface (API) endpoints for all published data resources. This meets the requirements of Ofgem's Data Best Practice Guidance. APIs allow stakeholders to build an interface to our published datasets and use our data in an automated and scalable way. There are 96 datasets on the CDP, so for ease of navigation these can be filtered according to the needs of the stakeholder. We also publish the NGED policy suite which describes details of the methods used to collect the data contained in the CPD.

Data principles and quality

Our approach is set out in our Digitalisation Strategy and aligns with Energy Data Taskforce recommendations, and Ofgem's Data Best Practice Guidance. This includes the consistent provision of meta-data and data dictionaries. This helps ensure accuracy of data. Where any dataset quality is deemed to not meet user needs, we follow the data custodian approach as per industry guidance. Following the principle of presumed open data, we publish non-anonymised data where possible. In several cases, for example on flexibility services, we obtain permission to publish full market information in the contracts. Where attributed data is not appropriate for publication, for example because it's commercially sensitive or could distort markets, we publish anonymised data.

2.2 Data on Planning and Network Development

DFES data

Distribution Future Energy Scenarios (DFES) establishes a forecast of future network use. This process has its own landing page, which links to these supporting reports and datasets:

- The projected demand volumes broken down by licence area/region
- An Interactive Map showing projected demand growth out to 2050 under all DFES scenarios. This can be viewed by Electricity Supply Area (ESA) or local authority area, including a bespoke local authority report. The map also provides users with the ability to visualise growth for specific technologies
- Customer Behaviour Assumptions detailing the modelling assumptions used for all technologies included within the Network Development Plan (NDP). This provides stakeholders with detailed information on how our DFES forecast volumes are translated to network utilisation and how we anticipate different technology behaviour changing over time
- Net Zero South Wales Innovation Project, which produced an integrated DFES for gas and electricity across that region
- Distribution Future Energy Scenarios Technology Summary Reports, are provided for each licence area (see for example documents for 2023 under DFES publications), and outline all of the data sources which are used to define our projections. We use third-party data to supplement existing NGED datasets, such as utilising census data to identify the proportion of homes with access to off-street parking, which impacts the uptake of domestic EV charge points.

NDP data

We publish our Network Development Plan (NDP) every two years consistent with licence conditions. The NDP outlines how we expect to develop our network over a ten-year period. The plan assesses the future suitability of the distribution network and identifies sites that may need intervention. The NDP also provides transparency to stakeholders on the technical feasibility of the different options.

> Collaboration NGED has worked with other DNOs via the ENA to define the common high-level end-to-end process for delivering the NDP licence requirements in the context of planning network investments and other reporting. This collaboration has delivered a consistent and comparable process and data, to support stakeholder engagement. Stakeholder engagement

Our NDP homepage provides a high level overview of the network planning process. It links to four main documents:

- Intro, purpose and glossary document provides a landing zone and helps stakeholders navigate and understand the links between different datasets
- Methodology Report outlines our analytical approach
- Network Headroom Report is a dataset of current and future available capacity at each substation forecast to 2050
- Network Development Reports provide a technical summary of areas for future network development, details of the constraints, and potential solutions.

The NDP Introduction and Purpose Document sets out interactions between the NDP and other related datasets and documents, and signposts and links to the other landing pages.

> Stakeholder engagement We published the NDP Introduction and Purpose Document following stakeholder engagement on the availability and transparency of system planning related data. This document also describes how we have consulted stakeholders on the methods and the formats for data availability - and the action NGED has taken as a result.

DNOA Data

The Distribution Network Options Assessment (DNOA) homepage hosts data broken down by licence area, but also on constraint issues. The DNOA provides transparency to stakeholders on each network investment decision at high voltage level, and describes programmatic decisions for low voltage networks. The DNOA is published twice a year, and the homepage contains links to the latest and previous DNOAs, as well as providing detailed information on the costs of each scheme under each licence area. The decisions detailed in the DNOA are made according to the published Common Evaluation Methodology.

Improving our planning and network development

We are currently developing an enhanced next generation capacity map that will be launched in 2024. This will replace both the Network Capacity Map and the EV Capacity Map into a single heatmap. This improved map will better incorporate DFES scenarios, provide geographic area maps for substation areas, and increased visibility on flexibility and network management actions.

Improving use of data to support Local Area Energy Planning — PRIDE

This project aims to support local area energy planning and serve network investment decision needs, to fast-track low-carbon technology deployment at a regional level. The project includes developing a 'whole systems digital planning tool'. NGED leads a consortium which includes Regen, the West Midlands Combined Authority, Advanced Infrastructure Technology Ltd and National Grid ESO.

The next phase aims to finalise the tool and establish the suitability of a digital solution to support Regional Energy Strategic Planner (RESP) function.

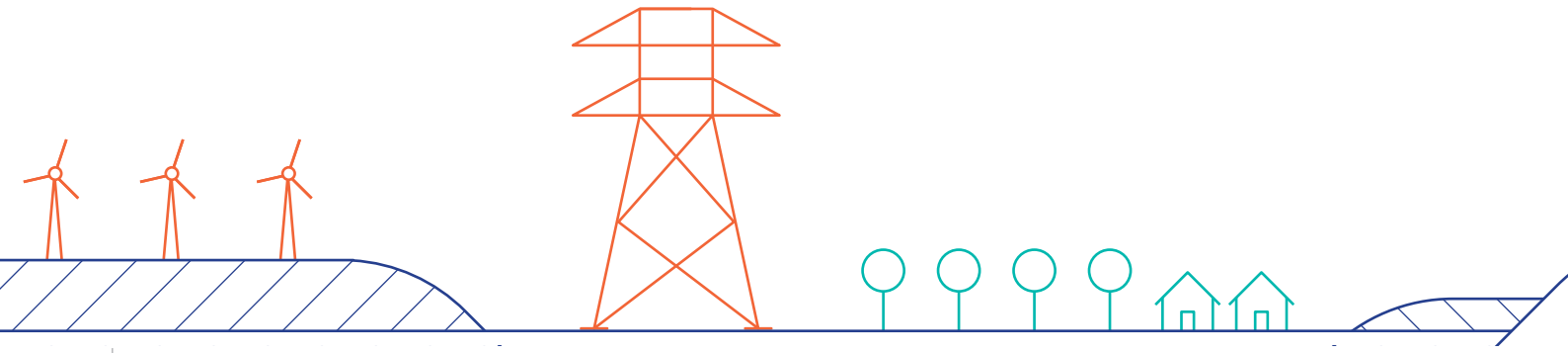
Strategic engagement with a local authority to improve our forecasting ★

We have engaged with Solihull Metropolitan Borough Council (SMBC) over a number of years. Within this borough there is a high density of large industrial consumers, many with their own decarbonisation plans. These industry plans aren't consistently reflected in the local authority's own energy development plans. This meant a discrepancy between future industrial demand and our own DFES work, which stakeholders raised with us. We listened to them, and worked with the local authority and UK Central Hub through regular engagement, to improve our forecasting. This led to significant changes to our DFES work in the region, including an additional 7,000 domestic dwellings by 2035, and 76 hectares of industrial and commercial floorspace.

This strategic engagement delivered:

- Better use of local knowledge to improve accuracy of DFES within the region, making our system planning more effective
- Stronger ongoing processes, as DFES now considers the deployment of different technology types in industrial and commercial heat supply more specifically
- Enhanced understanding of and buy-in to our processes by stakeholders, including increased understanding by them of how their inputs are used.

SMBC told us: ***"NGED have worked to understand our concerns and views. Our collaboration means their forecasting is now based on our local knowledge and is aligned to our net zero plans"***



2.3 Data on Network Operation

We published our Networks Visibility Strategy at the end of 2021, focusing on improved monitoring of the network. This includes the deployment of bi-directional power flow monitoring at 11kV and higher voltages, and the roll out of 15,500 LV monitors. While we deliver this improved network visibility, we aim to share as much of the data we already collect as possible. We are evolving the approach as data becomes available.

The data we publish and update at least every year includes:

Datasets	Use Case		
	Connections Planning	Curtailment Forecasting	Flexibility
Aggregate Smart Meter Consumption Data: We publish aggregate smart meter data at secondary substation and LV feeder level. This covers active and reactive consumption.	✓		
Boundary Data Flows: This includes the net demand and generation by technology type for each supply point and primary substation every five minutes across our network, allowing stakeholders to understand the power flowing into and out of our network. This data can be utilised by stakeholders and flexibility providers through the data viewer, export or API to feed into their short-term forecasting.	✓	✓	
Primary Transformer Flows: In addition to the five minute granularity flows, we publish two years of half-hourly averaged transformer flows (in MW or MVA depending on the available monitoring) at all Primary substations.	✓	✓	
Transmission – Distribution Interface Data: In addition to being the first DNO to adopt this improved format across all our Grid Supply Points (GSPs), we publish this data on our website and regularly update it. This gives customers visibility of transmission headroom, queue and indicative timescales for connection. We also recently updated the user interface to improve customer experience.	✓	✓	
Data on generator outages and curtailment is available once registered on our **Generator Portal**. We inform connected generators of outages or curtailment that will affect them via this portal. As well as planned outages, generators can also see historic outage data.	✓	✓	
LV Insights Platform: Where LV monitoring is in place, we publish extensive data including feeder level real and reactive power flows, current and busbar voltages, all at 10 minute intervals.	✓		✓
ANM Curtailment: Alongside the improved data to support curtailment forecasting, we publish details of historical curtailment triggered by our Active Network Management systems.		✓	
Technical Limits: This initiative changes the constraints on the way we can operate the network, which allows us to accelerate the connection queue. We share both the technical limits associated with each Grid Supply Point, as well as details of roll out plans and webinars we've held, which explain how it works.		✓	
Flexibility Dispatch Data: We publish data on every flexibility dispatch event including the time, volume, price and carbon impact, of the dispatch. This is currently done yearly via our Distribution Flexibility Services Procurement Report, with CSVs uploaded to the Connected Data Portal. We aim to publish data more frequently next year.			✓

Using DSO data to accelerate customer connections ★

Clearviewconnect is a DSO report providing a comprehensive view of available capacity at a particular location and network level. It means generation customers can:

- Judge how long a connection might take at a particular location, how much curtailment they will face, and who else is in the connections queue before them
- Compare costs across a number of connection sites
- Plan better, with reduced risks, based on more accurate connection queue information.

Ultimately it means reduced chances that generators will submit multiple speculative connection applications, holding space in the queue they won't use.

Customer testimonials

Clearviewconnect was developed with extensive, targeted engagement with larger stakeholders. In a response to an Ofgem consultation, Centrica said:

"We welcome NGED and UKPN's launching their Clearviewconnect and Network Operational Data Dashboard reports in the last few weeks as a significant step forward in improving queue visibility."

We have shared the underlying methodology for making this data available with Northern Powergrid, with a view to achieving standardisation across DNOs in the longer term.

centrica

Going beyond licence conditions on Long Term Development Statement (LTDS)

We received feedback that the base format required by the LTDS licence condition makes it complex and time consuming to use the data. Ofgem are leading LTDS reform to meet changing stakeholder needs and change from the existing tabular format to a Common Information Model (CIM). We have been actively engaging with this reform through the working group, which will agree to phase in changes over the coming years. Instead of waiting for these changes to be implemented in the licence, we took a proactive approach and published our LTDS model in CIM format to make it easier for stakeholders to understand and utilise the available data.

The model enables stakeholders to import data directly into their own power system software. This significantly reduces the time it takes for users to be able to run meaningful analysis on our network.★

10GW capacity release to reduce connections queue

We have worked with other system and network operators through the ENA, to enable faster connections without needing to wait for major transmission works to be completed.★ This initiative changes the Technical Limits on network operation to allow additional generation connections on a non-firm basis.

Out of the 10GW available capacity we have identified under this initiative, we have already issued a total of 90 variations to customers totalling 3.3GW and we have had signed variations for 39 schemes, totalling 1.38 GW, more than any other DNO.

We will launch phase 2 of Technical Limits at the end of April 2024.

FAST FACT

Average acceleration of connection dates - 5.5 years for 90 customers.

Consulting on Improvements to Curtailment Data

Working in partnership with UKPN, we are engaging stakeholders on how to improve availability of curtailment data and associated analysis. Noting the limitations of DSO-led curtailment forecasting, we set out three ways in which this could be improved. In January 2024 we sought views on what stakeholders would find most useful. We are currently considering the views and will publish the outcome of the consultation in the coming months.

We share the following Network Operation data with Electricity System Operator (ESO)

- **Distributed Energy Resource (DER) Performance:** We report regularly to the ESO with a host of datasets providing them visibility across our network, via our 'week 24' report. This includes DER performance and connection parameters. Our week 24 report is not currently published but could be, should a requirement or use case be identified. Similar information is however included in our load forecasting which is publicly available
- **Real-Time Data:** Via our Inter-control Centre Communications Protocol (ICCP) link we provide the ESO with visibility of flexible and non-flexible DER output across eight GSPs in the South West as well as individual generators on the MW Dispatch scheme. Via a separate link to the ESO's Ancillary Service Dispatch Platform we also provide real-time monitoring and availability status of MW Dispatch generators. We are working with the ESO to identify other datasets that could benefit from being shared
- **Risk of Conflict Reports:** Through our work on Primacy and the MW Dispatch Service, we now share Risk of Conflict reports with the ESO weekly. This highlights where conflicts may occur between ESO and DSO actions. These cover the agreed Open Networks Primacy use cases, as well as potential conflicts due to outages and ANM for MW dispatch
- **Dispatch Plans:** We do not currently share these, but plan to do so when they become relevant.

2.4 Data on Flexibility Market Development

We publish a host of data to support engagement in our flexibility markets, such as our **Flexibility Services Procurement Statement.** This is published every year and has been since April 2021, in accordance with our licence conditions. This statement summarises changes to the way flexibility products are procured including contractual amendments. It acts as a guide to stakeholders in navigating publications and available data to support participation in our flexibility markets. As well as inviting views on the availability of data and the structures around this, the statement also sets out changes we have made in response to feedback. It explains the process for publication of flexibility requirements and the different products required. It summarises and sign posts the available data supporting flexibility markets as follows:

- **Distribution Networks Options Assessment (DNOA):** As detailed in section 2.2, the DNOA provides transparency to stakeholders on network investment decisions. Where flexibility is recommended it details when the need arises, as well as potential volumes required. It also signposts to zones where flexibility may be required in future. The DNOA acts as a hand over point for the procurement of flexibility services providing extensive information on why flexibility is needed and how long it is likely to be needed for
- **Network Flexibility Map:** The map provides a forecast of our flexibility requirements for our Higher Voltage zones, across the different DFES scenarios, over a five-year period. This includes the availability windows and expected market volumes. Visualisations of the data are available online through the mapping tool and datasets are downloadable without registration. In addition to the five-year forecast, the Network Flexibility Map also presents our firm flexibility requirements which feed into our procurement process. These procurement requirements are also shown on the collaborative **Flexible Power Map**
- **The Market Gateway:** The gateway hosts all our trade opportunities. This site details each of the requirements as well as the received responses from service providers, and our awarded trades
- The **Connected Data Portal (CDP)** also supports flexibility markets, as it hosts all the raw data supporting the previously mentioned publications in this section. Relevant data includes the detailed requirements in each zone as well as the associated geographic polygons. CDP also hosts the core data for the LV zones as well as the splits in requirements between the different products available in a single zone (as Trade Opportunities) and the final Trade Awards.

The Flexibility Procurement Statement also signposts additional tools to aid FSPs in understanding our requirements. These include a **Post Code checker** which helps providers to understand where constraint zones might be, and a **service value calculator** which helps them understand the potential value of flexibility services in different areas. Documentation relevant to flexibility markets is also summarised in our **Document and Data Catalogue**.

The Flexibility Procurement Statement also flags that the **Flexible Power Website** provides:

- **Procurement results** – since 2018, we have published data to communicate the procurement cycle results within one month of contract award. This includes the counterparty, technology type, capacity, length of trade, and price awarded to each contracted party. We also publish a summary of the outcomes per Constraint Management Zone including the volumes required, the number of bids received, the volumes awarded and the zone price
- **Flexibility zone activity timetable** – this details which months of the year each zone has requirements for provider availability.

3.1 Our flexibility products, contracts and processes

We design our flexibility markets and procurement processes to be open and transparent, to drive maximum participation from diverse sources, in a technology neutral way. Our Market Gateway, launched in July 2023, is the entry point for prospective service providers. We developed the Market Gateway to deliver the contracting and technical on-boarding processes that Flexibility Service Providers (FSPs) need to complete to become eligible.

The Market Gateway provides links to our guidance page. The guidance page links to several documents with different levels of detail, including the procurement process overview document and detailed guidance to flexibility providers. We created the Market Gateway based on extensive engagement with FSPs, over several years. This process established their needs and ways of working in detail. Commercial and technical qualification is now fully automated, and we will deliver the same for trading over the next year.

Key benefits of our Market Gateway ★

- Complete digitalisation and streamlining of the initial procurement process, delivering efficiency for both us and for FSPs
- Lays the foundations for the flexibility markets at the scale we expect to see developing over time – we are prepared for growth in flexibility markets!
- The system can scale up by several orders of magnitude without needing major upgrade
- Provides a pathway to procuring energy efficiency and secondary trading as the market for these products arises in future
- Automation and digitalisation unlocks lots of small assets playing in markets, e.g. enabling us to launch low-voltage (LV) flexibility zones in the last year. Our latest procurement covered 1,426 zones
- Uses common data which allows FSPs to select or develop their own interface product in a non-proprietary way.

FAST FACT

Today we have 70,000 assets registered on Market Gateway, compared to only 1,000 a year before.

This represents a doubling in the number of FSPs and 70x the number of assets compared to the previous year.

Overarching contracts ★

In March 2023 we introduced a new approach to flexibility services procurement: using an overarching contract. These contracts mirror those used by the ESO in their procurement of flexibility. They allow us to manage compliance with Utilities Contract Regulations, while accommodating more flexible procurement at different timescales. Rather than contracting for every competition, FSPs enter into an overarching contract. This approach means we don't need to run a formal tender for every competition, reducing the administrative burden both for us and for FSPs. It also removes the need to impose a 10-day standstill following each tender, creating a more expedient process for both parties.

Registration processes ★

In May 2023, we also introduced functionality for FSPs to register and validate their assets with us at any time. Previously this was only available at certain stages ahead of procurement rounds. Open pre-registration means FSPs can work to their own timetable. Assets are also approved for competition entry before a competition opens. Both of these changes have enabled us to introduce our short-term weekly competitions. We've built data infrastructure to enable the move to more frequent day-ahead competitions, which we expect in 2025. In theory, closer to real-time auctions are also possible without major changes to the Market Gateway. Our approach to registration of assets and organisations has become the industry standard.

Standardisation of our contracts

We have played a leading role in the Open Networks workstream to standardise contracts across DNOs, in response to stakeholder feedback. Our overarching contract approach has become a benchmark which the rest of industry is now moving towards, delivered through Open Networks.

We have implemented the Open Networks (ON) Standard Agreement. This has just been superseded by the version consulted on in early 2024. We will implement the updated version in the coming months. We adapt the ON Standard Agreement to our overarching contracts. These include a range of features to encourage participation and minimise risk for FSPs:

- Capped mutual liabilities
- Performance based payment mechanisms to incentivise participation
- No penalties for non-delivery, only loss of potential revenue
- No exclusivity clauses
- No obligation to provide availability.

Dispatch process

The Flexible Power Portal (FPP) is the operational tool we use to facilitate all API communication necessary to dispatch services, as well as to calculate settlement and performance. It is separate to the Market Gateway which delivers flexibility procurement. Once a flexibility service provider is awarded an overarching contract

through the completion of the commercial qualification steps, they are provided with an FPP account. We have collaborated with three other DSOs on the FPP to deliver consistency for FSPs.

Our flexibility products

We currently procure 4 Active Power services: **Secure, Dynamic, Restore and Sustain**. These align with the Open Networks Common Services definitions and are summarised below.

These products include procurement at extra high voltage (EHV), the boundary between EHV and high voltage (HV), HV, and the boundary between HV and low voltage (LV).

FAST FACT

Stakeholder Engagement on flexibility in numbers. In 2023/24 we:

- Held 8 flexibility webinars and workshops, reaching more than 250 flexibility market stakeholders
- Delivered 30 Flexibility Surgeries with prospective Flexibility Service Providers.

We will align to the recently updated Open Networks products by summer 2024.

Sustain	Secure	Dynamic	Restore
Scheduled utilisation service with fixed delivery periods	Scheduled availability and utilisation with bespoke requirements per zone	Scheduled availability and operational utilisation dispatched 15 minutes ahead of real-time	Operational utilisation dispatched 15 minutes ahead of real-time

3.2 Our stakeholder engagement on flexibility markets

Engaging domestic consumers in our flexibility markets

LV Sustain rewards domestic consumers for lowering their energy consumption in the same four-hour time window, five working days a week throughout the winter. Stakeholder engagement We designed this product in response to feedback, as well as to make flexibility services more accessible for a wider range of domestic customers. LV Sustain does this by establishing a 'fixed requirement flexibility contract', which is predictable and easy to understand. It gives suppliers, aggregators, and households consistency.

The flexibility offering is now available to 176,000 households, and we intend to expand this. We contracted over 1,200 domestic households through this product, via aggregators and suppliers, to deliver flexibility through winter 2023/24. We collaborated with partners Octopus Energy and Axle Energy to deliver this product. Collaboration

The flexibility provided will free up winter peak capacity to allow new connections, and defer reinforcement, delivering savings to all consumers. ★

Providing information

There are three key documents which help stakeholders engage in flexibility markets, with increasing levels of detail:

- **Our Flex in 5 document:** provides a high-level overview of the flexibility services and how, when and where we buy them. This was first published in March 2024
- **Flexibility Services Procurement Statement:** fulfils a regulatory requirement, and provides the next level of detail to potential service providers on how our markets and products are structured. Published annually
- Our **detailed guidance** gives in-depth technical information about our flexibility markets, across procurement, dispatch and settlement.

In addition to the extensive information available on our websites, we take a multipronged approach to direct engagement according to different stakeholder needs.

Support in service provision

We give ongoing support to FSPs to help them participate in the qualification and procurement process. We have two, full time commercial officers delivering our 'open door' policy regarding queries from FSPs.

The commercial officers also deliver more proactive support in the following forms:

- Our quarterly 'On Track to Trade' webinars give information on the process, the latest flexibility opportunities, and a chance for Q&A. Both the slides and recordings are available on our Flexible Power Website
- A range of flexibility surgeries and case study documents. These illustrate to potential service providers how their services could work and support dialogue with commercial officers. These are also available on the Flexible Power Website linked above.

Axle connects behind-the-meter assets (EV charging, batteries, heating) to flexibility markets.

Karl Bach, co-founder and CEO said:

"We participate in a number of flexibility markets at the DSO and ESO level, and we're used to working through the growing pains of bringing small-scale assets to market. We've had an extremely positive experience working with the NGED flexibility team. They've been helpful and responsive throughout, and have helped overcome the inevitable bumps along the way. They've made themselves available whenever issues arise, and are with us every step of the way. We look forward to continuing to work closely with the team."

EV.energy shares the value of flexibility with regular consumers, helping them easily and comfortably become grid participants.

Michael Kenefick, Grid Services Manager told us:

"We enjoy working with the flexibility team at NGED. The Market Gateway and Flexible Power platforms work well together, and the process is clear for every tender round. Dispatching and settlement all proceed without issue. Helen and her team are very responsive if anything crops up. The automation means that we can reliably deliver flexibility services."

Strategic stakeholder engagement

As well as providing support to the procurement process, we also engage with stakeholders at a more strategic level. We seek views on how we can develop and improve our procurement processes, usually focused on resolving a particular issue. Three examples include:

1. Exploring revenue stacking for FSPs

Our recently commissioned Stackability Report published by Cornwall Insight explores the extent to which FSPs can obtain multiple revenue streams across different services simultaneously. The report focused on the way services being procured by a DSO integrate with other, more established revenue streams such as those procured by the ESO, or other DSOs. The report makes several recommendations directed towards ESO, DSOs and Ofgem, based in part on significant engagement with FSPs. We held a webinar to present the findings to 264 stakeholders, followed by a workshop to collate feedback. The feedback is published on our website and has been shared with the ESO and the Open Networks project.

2. Standardisation and common approaches

We invest significant time and resource engaging in the Open Networks project, which has extensive stakeholder engagement built into its processes. This includes regular engagement via the Challenge and Dissemination Groups as well as consultations on the Programme of Works and the content of workstreams.

3. Consulting on standardisation in flexibility procurement

During the last regulatory year, we have worked with UKPN to identify potential areas for further standardisation in flexibility procurement. We plan to consult jointly on our proposals in summer 2024. As two of the biggest procurers of DSO flexibility, we are able to establish and share best practice. We hope consulting together will streamline stakeholder engagement and encourage collaboration and alignment with other DSOs.

Plans to improve our flexibility procurement

Our focus to date has been on building the market frameworks, enabling them to operate efficiently and scaling them up.

Next steps include:

- Expanding automation to include the trading stages of flexibility
- Implementing minor changes needed to bring us inline with latest Open Networks standards
- Considering changes to our processes and systems to enable secondary trading, and further reviewing the market to assess levels of demand for this.

How stakeholder engagement shaped our LV Sustain product

Trial: Our initial trials used a single LV zone per procurement which we believed would be the simplest way to procure and support participation. Trials revealed that using this approach created additional complexities for stakeholders, mainly around lack of transparency over our decisions on which flexibility sources to use.

Iteration: We sought views from FSPs on splitting into individual zones, to address issues identified. This traded transaction scale at the beginning of the process, for better transparency of decision making later on. This made it easier for low voltage FSPs to participate.

Outcome: Our latest procurement for LV Sustain was offered across 1,426 individual zones. 220 of the zones participated in this service, much of which came from domestic consumers. This has contributed to our overall network reinforcement deferral figure for the year.

How we developed the Market Gateway based on participant-led innovation and iteration via consultation

Initial need: Our Future Flex Innovation Project identified the need for a digital platform to support the scale up of flexibility services via a participant-led trial. This finished at the end of 2021.

Iteration: Our subsequent Evolution of Flexibility Services document in regulatory year 2022/23 consulted on and developed how this portal would work and interact with wider systems.

Outcome: In regulatory year 2023/24, we introduced the live, new functionality via an operational tool, which drives efficiency for us and our stakeholders.

3.3 Delivering system wide benefits through flexibility

We provide ongoing real-time data to the ESO via our ICCP link (see section 2 of this document for more details). This supports coordination across our distribution networks and the wider system. We have also worked to improve coordination between distribution and transmission, starting with our engagement in Regional Development programmes. We used these as a scoping exercise to understand the regional issues and how better coordination could address them.

Working towards standardisation in support of revenue stacking ★

Allowing FSPs to provide multiple services across the system simultaneously, means more optimal utilisation of flexibility resources. Ultimately it results in lower costs for us and therefore consumers. We have worked to support revenue stacking by commissioning analysis by Cornwall Insight, as mentioned in section 3.2. Our aim was to clarify which revenue streams are stackable. Numerous stakeholders told us this clarity was previously lacking.

The stacking report concluded that there was a significant proportion of revenue which is implicitly stackable. We now are working via the ENA to get industry-wide consensus on the findings, and provide clarity to FSPs. The terminology we developed with Cornwall Insight which is set out in the report ("jumping", "splitting", and "co-delivery"), has already been adopted by the ESO, which is a good first step in developing a common understanding of the issues across the sector.

Improving flexibility procurement to support revenue stacking

In addition to our work with Cornwall Insight, we are implementing changes to the procurement process to make it easier for FSPs to stack revenues. Based on stakeholder engagement:

- We moved from historic output baselines, to static baselines that are modelled on technology type. This facilitates measurement of multiple actions across different services by FSPs
- In the coming year, we will change the dispatch on our Dynamic Product. This will move from a 15 minute to a day-ahead dispatch period. This means providers can participate in the ESO's balancing mechanism alongside our dynamic product, because it allows FSPs to provide a firm position at Gate Closure, one hour before real-time.

Establishing rules for coordination

Our work on primacy seeks to establish agreed rules and processes to manage potential conflicts between ESO and DSO. This is critical to ensure that actions from each system operator are effective and not counteracted. We continue to co-lead the development of primacy rules via the Open Networks project.

The first primacy rules and processes delivered in 2023/24 focused on the conflicts between DSO procurement and ESO constraint management actions. Since then, we have prioritised improved data sharing to deliver a wider set of use cases. Rather than take a case-by-case approach, data sharing supports decision making on a principles basis, across a number of similar use cases. NGED is one of the DSOs fast-tracking implementation of agreed Primacy rules, aiming for summer 2024.

3.4 Delivering coordination benefits now through innovation

Our MW Dispatch initiative aims to manage transmission constraints in South West England, driven by high potential for renewable generation in the region. The project is a collaboration with the ESO and provides an innovative transmission constraints management service.

MW Dispatch allows the ESO to expand its 'connect and manage' approach to assets which are outside the balancing mechanism. This service provides the ESO with increased visibility and commercial control of distribution connected generation, whilst coordinating with the DSO: an end-to-end whole systems approach.

MW Dispatch includes innovative use of existing DNO equipment to provide visibility and control to the ESO, with no additional technical complexity for the connecting Distributed Energy Resources (DER). This avoids the need to build APIs or interface with wider ESO systems which might be prohibitive for smaller DER.

In collaboration with the ESO we built in:

- A simple contractual process for DER
- Mapping of assets across systems so we can give the ESO real-time visibility of each individual MW Dispatch generator including its output and availability status
- 'Risk of conflict' reports highlighting to the ESO when the MW Dispatch generators might be unavailable due to outages on the Distribution Network, or where ESO actions clash with DSO flexibility services or Active Network Management systems.

Outcomes of MW Dispatch ★

- More **low carbon generation** connected to the distribution network, faster – **around 2GW of connections** which would otherwise have not been possible, have been offered via the scheme
- **Lower costs** from avoided transmission reinforcement
- Lower costs from fewer actions by the ESO in system balancing through conflict avoidance
- **Lessons learned** which have fed into the Open Networks Primacy Work.

Establishing effective models for coordination in the longer term

Coordinated Operational Methodology for Managing and Accessing Network Distributed Energy Resources (COMMANDER) This innovation project aims to identify more effective long-term (2030 and beyond) models for ESO-DSO coordination. COMMANDER is now developing a roadmap and recommendations for implementation of models for unified optimisation in 2050. In doing so, it highlights the significant complexities of transition and when they should be addressed.

3.5 Flexibility market access

As we've developed flexibility processes and systems, we have focused on scalable interfaces that provide an open ecosystem for flexibility markets. We have several key interfaces serving different functions:

- Provision of market information
- Commercial interactions
- Operational interactions.

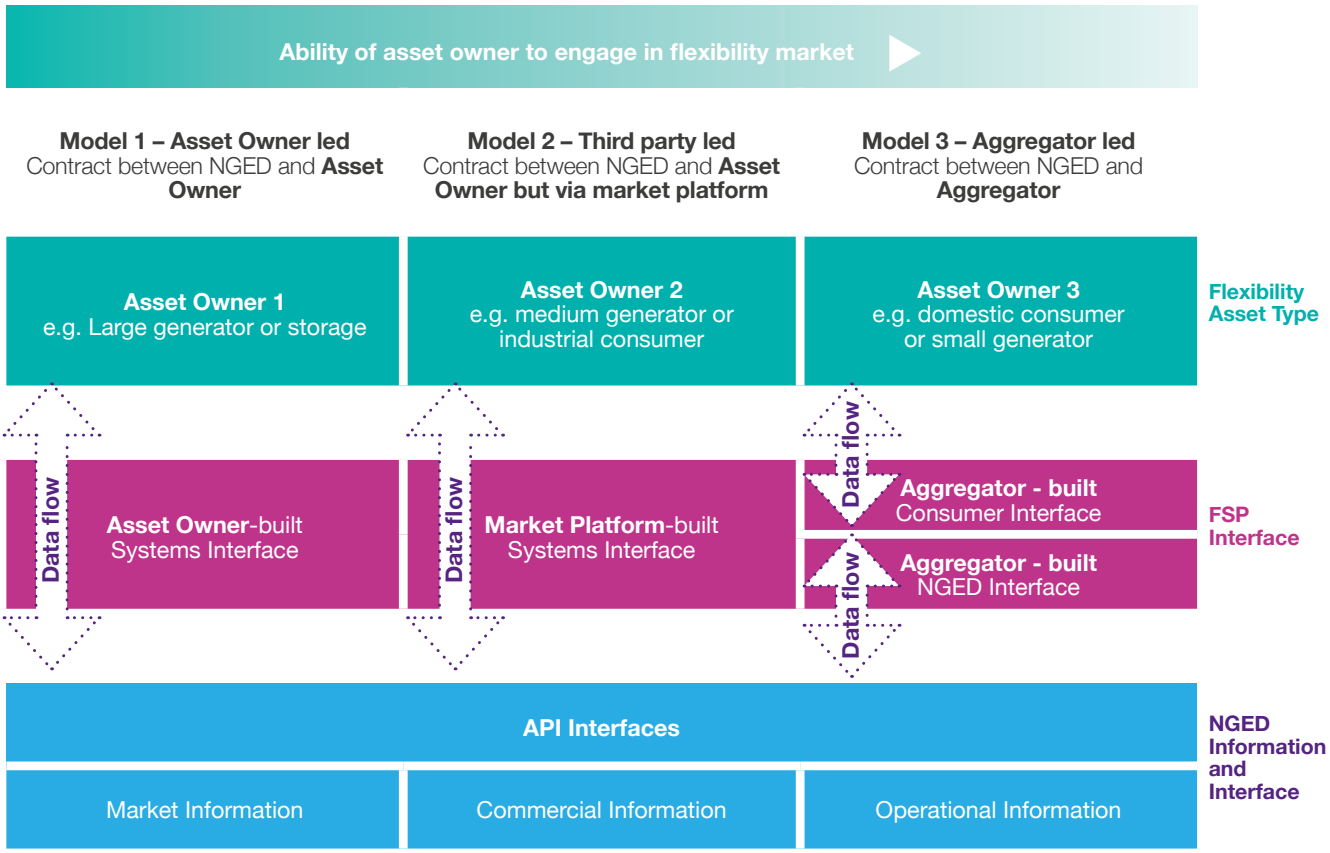
These interfaces (which are API compatible for all repetitive processes) allow FSPs to interact directly with us if they chose to build their own systems. However our approach also allows third parties to develop interfaces for FSPs. This approach allows choice and supports maximum market participation across FSPs of different size and capacity. Our approach also aims to drive competition in the market to develop interfaces. For example, there is scope for third parties to offer services which coordinate across multiple markets.

Collaboration We are currently trialling and iterating this innovative capability through our partnership with Piclo and its PicloMax product. We are using this partnership to test the interoperability of our systems.

Collaboration Over the last few months we also agreed to work with Electron to further test and develop our system's interoperability. We will continue to test and develop our systems to ensure delivery of our 'open ecosystem' approach.

★ The interoperability we deliver means that we will be able to complete overarching contracts, validate assets and receive trade responses into our Market Gateway and assess all these, regardless of interaction through a third party or direct with FSP. We are doing this by using the standardised Open Networks pre-qualification processes.

Our approach to flexibility market access provides a range of routes for participants, according to their capacity to engage



4.1 Our options assessment methodology

Our Distribution Future Energy Scenarios (DFES) establishes a forecast of future network use. Producing DFES is the first step in our planning methodology and is updated annually. The process has a dedicated webpage which provides links to information on a regional basis going back four years. The DFES projections are aligned to a scenario framework, to allow for comparison between DFES publications from different DNOs and the Electricity System Operator Future Energy Scenarios (FES) publication. Our methodology includes a prediction of how energy efficiency will evolve over time as set out in our customer reports. Combining DFES with the Customer Behaviour Profiles and the Long Term Development Statement allows us to simulate how customers will use our network in the future under different decarbonisation pathways. In doing so we can identify what investments are needed and when.

The NDP is the first stage in the options assessment and is focused on establishing the technical suitability of different solutions. Our new NDP Methodology sets out how different network options are assessed (see planning and network development page 10), including through power system modelling across different timelines. This tests a solution across a range of future pathways and in conjunction with other constraints. Potential delivery challenges and wider system impacts are also considered. Our liaison with other licensees and assessment of options from a whole system perspective is also described in the section on cross boundary engagement.

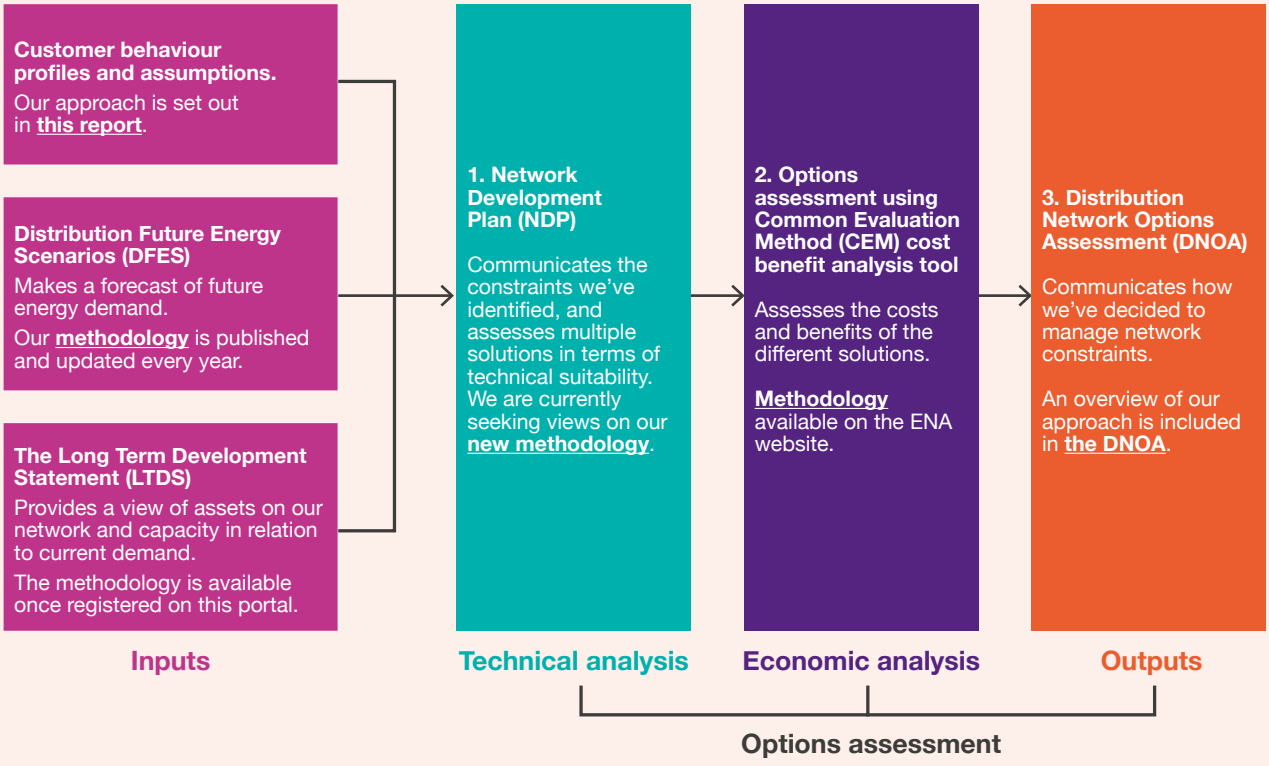
Once the technically feasible options have been determined, the relative costs and benefits of these are assessed using the Common Evaluation Method (CEM). Solutions are chosen based on maximum option value and flexibility for future network development, alongside long-term economic value. NGED chairs the ENA group leading the development of the CEM and the associated tools.

Whole system coordination

Where optioneering reveals implications for neighbouring networks or transmission, we proactively engage relevant licensees to assess options. The Whole System Coordination Register on our website describes the outcome of the activities NGED has undertaken to coordinate and cooperate with other electricity network licensees to develop whole electricity systems outcomes.

The licence condition for the Whole System Coordination Register includes liaising with other electricity network licensees for whole system benefit. However, NGED goes beyond the requirement by including collaboration which confers whole system benefit with other parties that are not electricity network licensees. This register is updated at least annually, usually in May, to reflect the coordination that has taken place during the previous regulatory year. We are currently working with National Grid Electricity Transmission (NGET) to release a unified National Grid whole system coordination register that will showcase the work being undertaken across both transmission and distribution.

We publish the various methodologies associated with different stages of the system planning process



Examples of the Whole System Coordination that we have undertaken over the last 12 months:

Description of Coordination	Collaborating Parties	Whole System Benefit ★
Undertook detailed options analysis for a new Grid Supply Point (GSP) in South Devon due to NGED 132kV circuit constraints. Coordinated with ESO and NGET to understand the available transmission solution, cost and timescales.	NGET ESO	A phased plan which includes nearer term distribution network improvements supported by establishment of new GSP in longer term which will future proof this network to 2050.
NGED's West Midlands licence area is interconnected with SPEN's at 132kV. Coordinated analysis and data sharing with multiple licensees to determine the optimal location for additional transmission capacity.	Scottish Power Energy Networks (SPEN) NGET ESO	The agreed combined solution reduces the need for multiple new Grid Supply Points, which should lead to a reduction in overall network investment.
NGET have an Accelerated Strategic Transmission Investment (ASTI) project ongoing near the UKPN and NGED shared Walpole GSP, where both DNOs have triggered major transmission upgrades. All three parties have coordinated to share data and agree a solution.	UKPN NGET ESO	The final build solution delivers rationalised transmission and distribution networks, which lowers the overall cost for the consumer.

Some of these coordination activities will be included in the May 2024 Whole System Coordination Register as they have only been triggered in the previous year.

Communicating outcomes of options assessment

Our latest DNOA provides detail on the system planning decisions we have made, broken down by licence area. Our DNOA is published twice a year and explains how our 'flexibility first' approach will be implemented on constraints that have arisen in the last six months. The DNOA details the different stages of the decision making process and sets out the timeline in relation to procurement rounds for flexibility.

★ We were the first DSO to introduce the DNOA. It has now become an industry standard – an indicator of how we lead the way on transparency to stakeholders.
We've supported a number of DNOs in developing a similar approach, through sharing best practice directly with them.

We aim to improve the DNOA with each iteration, based on the extensive stakeholder engagement we do around it.

The latest version includes the following improvements:

- Increased scope to secondary network constraints
- Coverage of £550m of intervention options, demonstrating consistency with our allowances
- Details methods (appendix A) on how we optimise and coordinate decisions on asset replacement with load related expenditure, delivering further transparency of our methodology and decision making process.

Options assessment outcomes 2023/24

Total schemes assessed	173
Flexibility	21
Reinforce	40
Reinforce with flexibility	45
Signposting	47
Remove	20

FAST FACT
This year we produced our eighth DFES and seventh DNOA.

4.2 Stakeholder engagement on methodology and options assessment

There are dedicated stakeholder engagement processes across the system planning process

NGED process / output	Distribution Future Energy Scenarios	Network Development Plan	Distribution Network Options Assessment
What we consult on	1. Assumptions for uptake/spatial allocation of technologies across a licence area 2. Information gathering from local authorities and major energy users on what demand they see coming 3. Cross sector/vector engagement occurs in the form of local area planning activities and liaison with gas distribution networks	• Methodology and format, and level of detail of outputs. We seek views on the approach to our analysis, how we present information, and the results • Our analysis includes modelling of transmission and interfacing distribution networks. Where our options analysis reveals implications for other networks, we liaise with other licensees to establish optimal whole system option	Methodology and format of outputs. Whether stakeholders agree with the cadence, approach and amount of data published and if they find it useful
How we engage	1. A webinar for each licence area in June to present DFES, with polls to gather feedback 2. Routine activity of DSO strategic engagement officers with targeted stakeholders e.g local authorities 3. Cross vector engagement occurs bilaterally or via local authority led energy planning	• Web form on the NDP page of the website (for a month before publication) • Webinar run as part of consultation with polls to gather feedback • We engage other DNOs, NGET and ESO through regulator bilateral meetings	Web form at (National Grid - Distribution Network Options Assessment)
Results of consultation	Our DFES homepage provides links to the following (under DFES publications): 1. Stakeholder engagement reports for each licence area 2. DFES reports for each licence area.	• Our NDP Methodology report details stakeholder feedback and how we've acted upon it • The results of discussion with other DNOs, NGET and ESO are shared directly with them and are shared on the whole systems register.	Awaiting consolidation of 2024 feedback

FAST FACT

We have delivered 290 Net Zero Surgeries over the last year.

Showing local authorities the impact they have on our system planning ★

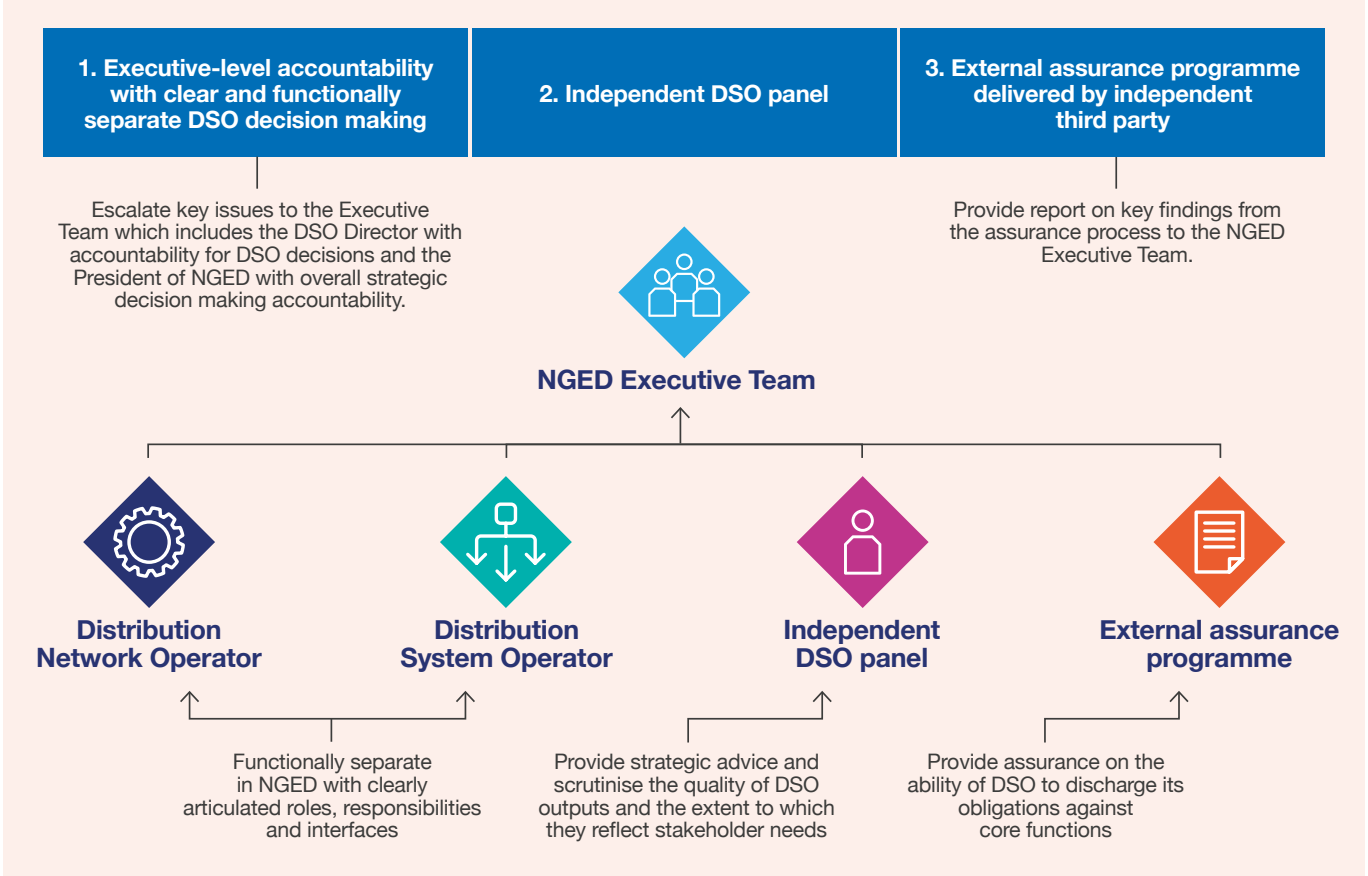
We have delivered 290 Net Zero Surgeries over the last year. These focus on developing understanding of how our system planning work can support the local authority's (LAs) net zero agenda. We show how this is done using local knowledge to develop accurate forecasts.

Over the next year we will present back to stakeholders our 10 year investment plan – which is the result of extensive stakeholder engagement, including these Net Zero Surgeries. This will enable LAs to see the impact of engaging with us, and explain how this will iterate and develop going forward. It will also provide LAs assurance that the network will be available in the right places to support their net zero transition.

Based on feedback from LAs, we have also developed our bespoke LEAP portal on our website, which brings together the various pieces of information LAs need to support their engagement in our planning process.

4.3 Conflicts of interest

Our RIIO-ED2 Business Plan set out three key commitments on how we will manage perceived and actual conflicts between the DSO and the network owner as detailed below.



4.3.1. Establish functional separation

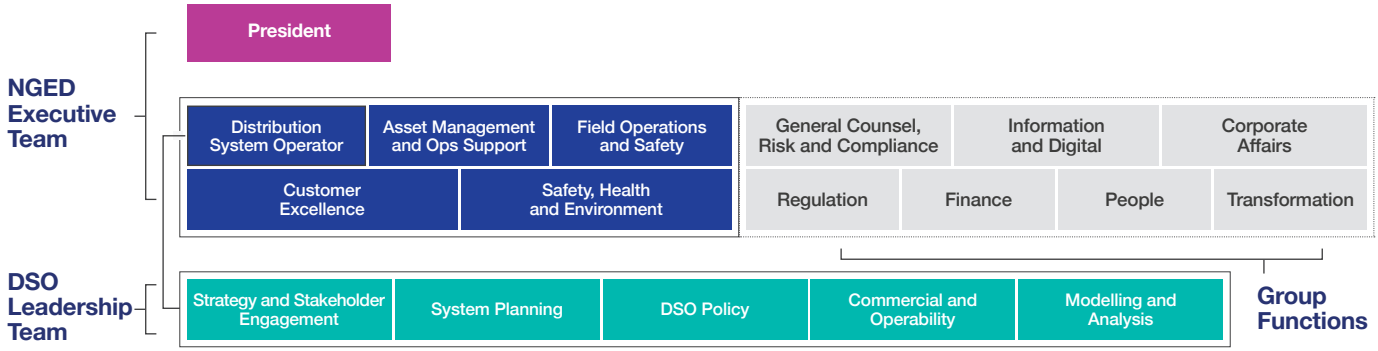
We have taken significant steps over the past two years to implement meaningful, functional separation of the DSO functions from those of the DNO. We've done this while keeping the DSO within the National Grid Electricity Distribution (NGED) licenced business.

We believe this approach strikes the best balance across the following objectives:

- Mitigating potential or perceived conflicts of interest
- Facilitating transparency in decision making
- Supporting the sharing of data, knowledge and services between DNO and DSO functions
- Keeping costs to consumers down while delivering a quality service.

We will keep our approach to separation under review and will continue to seek stakeholder views on this.

We have established separate DSO teams within the NGED structure, and board-level accountability for DSO responsibilities.



4.3.2. Our Independent Panel

We committed to introducing measures that will ensure independent oversight and external assurance of the DSO over the course of RIIO-ED2. As part of this we have appointed an independent DSO Panel in an advisory capacity.

The Panel will perform both 'critical friend' and forward looking advisory roles to the DSO. We've made this a priority for year one and have now successfully launched our DSO Panel.

DSO Panel Chair:

Regina Finn
Director at Lucerna Partners and Chair of the LCCC and the Electricity Settlement Company

DSO Panel members:

Doug Cook
Director of Strategy at Ohme

Nina Skorupska
Chief Executive of the Renewable Energy Association

Janine Michael
Deputy Chief Executive at Centre for Sustainable Energy

What is it doing?	In March 2024, we launched our independent DSO Panel composed of energy industry experts and thought leaders that will support us to deliver effective governance of our DSO. The Panel will play a key role in providing rigorous, independent and strategic advisory challenge to our DSO plans and ensuring that our activities are reflective of the needs of all of our stakeholders. The Panel, combined with our external assurance programme, will also play a role in ensuring that our DSO governance structures are operating effectively, and will provide recommendations for continuous improvement.
Who is involved?	The Panel is composed of industry experts equipped to represent the perspectives of a broad range of our DSO stakeholders – flexibility market participants, local energy consumers and communities, and energy generators. The Panel is chaired by Regina Finn, Director at Lucerna Partners and Chair of the LCCC and the Electricity Settlement Company.
Outcomes and timescales	The Panel will meet on a quarterly basis and provide regular feedback and strategic challenge to our DSO activities. On an annual basis, the Panel will deliver a report to our DSO leadership focused on the transparency and efficiency of decision making within our DSO function and the extent to which our activities and forward plans reflect our stakeholders' needs.

4.3.3. Develop an external assurance programme

Assurance of our DSO processes and policies, including functional separation of DNO and DSO roles, will ultimately be provided through regular external audit. In 2023/24 we have worked hard to improve maturity of our internal assurance processes before reaching this milestone.

Our intention is to move to the 'Three Lines' model for internal risk management and compliance as documented in our 'Guide to Governance with the DNO' document. We believe this comprehensive approach is proportionate to satisfy ourselves and our stakeholders that we are effectively managing perceived or actual conflicts of interest.

Employing this Three Lines model, in preparation for external audit, draws on wider business knowledge and best practice from across National Grid Group. Our indicative timeline for reaching external audit is outlined in our governance document mentioned above. We will continue to update our stakeholders on our progress towards this.

Stakeholder Engagement on Management of Conflicts and Governance

In January 2024 we held our 'Governance for Net Zero' engagement event where we convened 80 stakeholders representing 61 organisations from across the industry. We facilitated discussions on current industry governance topics, shared our progress on how we've evolved the role of the DSO to manage conflicts of interest, and tested our future governance actions with stakeholders, to make sure we reflect stakeholder priorities and concerns in our plans.

We captured insight and data from stakeholders on the day which can be found in our feedback report. We asked our stakeholders what internal governance features they thought were most important to ensure, and demonstrate, effective delivery of DSO. We had clear results which showed their order of priority as follows:

1. Transparent processes for seeking and responding to input from stakeholders
2. Clear and separate decision making frameworks for DSO including articulation of DNO:DSO interfaces
3. Independent oversight of decision making processes and outcomes
4. Executive-level accountability and board-level visibility of key DSO decisions.

This feedback, along with other questions we asked, helped to shape our recently published 'Guide to Governance with the DNO' document.
This engagement is also informing our agenda on governance and management of conflicts outlined in our Strategic Action Plan.

Our 'Guide to Governance with the DNO' and DSO policy documents

Our 'Guide to Governance with the DNO' document provides transparency to stakeholders on our DSO and DNO processes and how we are managing perceived and actual conflicts of interest in a meaningful way.

It also:
- Describes the split in roles and responsibilities between the DSO and DNO, and the interactions across key DSO functions
- Explains the extent of separation between the DSO and DNO, and how this benefits our stakeholders in the current regulatory landscape.

There are detailed operational policies that support the 'Guide to Governance with the DNO' publication.

Our DSO policy documents are designed to make clear at operational level the split in roles between the DSO and DNO parts of the business. They aim to support clear, transparent governance, and manage conflict of interests risks by providing clear accountabilities. We are the first DNO to provide this transparency by describing this split in roles in this operational detail. This year we published three DSO policy documents:

- This parent document describes the full intended scope of the full policy suite. This document sets out the issues that the suite of policies will cover when complete
- A policy document describing the split in roles between DNO and DSO in system planning
- A policy document describing the split in roles between the DNO and the DSO in system operation and dispatch.

While publicly available for transparency, these documents are also used by internal teams to aid decision making.★

5.1 Use of data to manage flexibility services

How we obtain data on DER performance characteristics depends on the type of DER:

For generators over 500kVA and any generator under an Active Network Management Scheme (ANM - which allows a non-firm connection), we use the DNO Connection Control Panel via the Supervisory Control and Data Acquisition (SCADA) systems. This is the established method for network data collection and provides a comprehensive range of data on the parameters of generators.

For generators under 500kVA where there is no ANM, we do not currently consider it proportionate to require the generator to install the relevant equipment and associated communications infrastructure relative to the scale of investment for the generation.

For flexibility services providers, data on all performance parameters is gathered and provided to us, in an automated, consistent way via the flexible power portal. This includes capacity, as well as maximum and minimum run times.

We combine this data on performance of DER with extensive data on the network loading and forecasting alongside data exchanged with the ESO – which is detailed in section 2 of this document to enable informed, coordinated dispatch.

As well as engaging stakeholders on the methods for dispatch, we also publish the outcome of all trades.

5.2 Decision making for dispatch

Decision making for flexibility services
Our approach to establishing a methodology for dispatch of flexibility is based on the ENA's common principles for dispatch. We first set out our interpretation of them, and attached a hierarchy to these in our Flexibility Services Procurement Statement which is published every year. Our hierarchy and interpretation is based on balancing the needs for transparency, efficiency and deliverability and provides a framework for our dispatch decision making.

More recently we published our Flexibility Service Selection Use Cases. This updates and elaborates our methods further – a reflection of this evolving space as dispatch volumes, and our understanding of the issues grows. We are learning by doing, whilst iterating our methods: this latest publication articulates some of the dispatch trade-offs we face, and examples where decisions are more marginal. We hope this publication stimulates debate and incites views on the issues; we will engage stakeholders on the contents over the next few months. Following this, we will publish an operational decision making road map in Summer 2024, which will clarify our thinking on how to resolve these marginal decisions. As one of the biggest procurers of flexibility amongst DSOs, we will continue to share our learning as it emerges.

As well as engaging stakeholders on the methods for dispatch, we also publish the outcome of all trades, so that stakeholders can complete their own analysis and understand the impacts of our methods. Full transparency of dispatch decisions is provided on the connected portal via the results of trades data, and a summary of these is published on a weekly basis.

Decision making for curtailment: reducing curtailment as part of efficient dispatch ★
For dispatch of curtailment there are more established rules. These are determined at the point of connection and incorporated into the connection agreement. This includes both manually instructed curtailment and more automated schemes such as Active Network Management. Scope for improvement on curtailment is focused on the data used to support these pre-determined decision making frameworks.

For manually instructed curtailment during outages, in 2023 we implemented enhanced modelling to review the curtailment requirements within connection agreements. By modelling the loading conditions expected during the time of the outage, in advance of the outage occurring, we can reduce the level of curtailment seen. In our piloting of this approach this year we have avoided 58GWh of curtailment for customers.★

★ An additional innovation in curtailment is our Whole System Headroom project, aimed at helping us understand the cost of curtailment to the GB consumer (rather than the costs to the customer being curtailed, or to the DNO directly). This will help us target our network interventions against a better metric. This work to date has highlighted the increased cost per unit of curtailment as volumes increase on the system, with work to better quantify this to be delivered in 2024.

FAST FACT

This year we have avoided 58 GWh of curtailment for customers.

5.3 Our operational structure and division between DSO and DNO functions

Our recently published Guide to our Governance with the DNO sets out our operational infrastructure and the split in roles between the DNO and the DSO. This document is intended to communicate this split to stakeholders in an accessible way. We have also published a more detailed policy document covering the same subject, but which is intended primarily for operational purposes, and which describes the split of responsibilities in more detail.

Our dispatch infrastructure is flexible and scalable

All dispatch is delivered via the flexible power portal, on which we collaborate with a number of other DSOs. The portal provides a separate system from the core of the DNO business, allowing potential for more complete separation of the dispatch function if this is ever determined the best course of action. The API functionality of the flexible power portal also allows significant scalability of dispatch actions. We are leading the Open Networks Operational Dispatch API working group to deliver a common approach to dispatch APIs across different platforms, with a view to simplifying processes for FSPs. ★ We have ear-marked capacity within the flexible power team to deliver system changes to realise the common approach and support delivery of dispatch in a non-proprietary manner.

We have established boundaries for operational decision making between the DNO and the DSO. This initial structure is intended to minimise DNO interaction with flexibility in order to minimise potential for conflict of interest.

◆ DNO ◆ DSO

Real-time

Timescale	Years to months ahead of real-time	From 8 weeks up to 24 hours ahead of real-time	From 24 hours ahead, up to real-time	After the real-time period
Operational phase	**Operational Planning** Longer-term planning for maintenance, replacement or reinforcement	**Programming** More detailed planning and refinement of plans based on current load levels and profiles and addressing emerging faults	**Control** Implementation of plans and management of faults	**Post Control** Review and evaluate actions
DNO	Plans curtailment by default, except where instructed by the DSO		Implements plans for curtailment and flexibility and manages faults	
DSO	Plans curtailment by exception, when there is an opportunity to improve curtailment performance or potential for flexibility to be used			All post-event analysis on curtailment and flexibility
	Plans dispatch of all flexibility services			
	Develops overarching operational policy regarding flexibility services and curtailment, and related security of supply issues			

Thank you

Email:
nged.energyplanning@nationgrid.co.uk

Linkedin
National Grid Electricity Distribution

Web
nationalgrid.co.uk
nationalgrid.co.uk/dso

National Grid Electricity Distribution plc
Avonbank
Feeder Road
Bristol
BS2 0TB
United Kingdom
nationalgrid.co.uk

DSO | nationalgrid