

**Electricity
Distribution**



Performance panel submission

April 2025

nationalgrid ▶ **DSO**



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Foreword

In March 2024, National Grid DSO published a 2-year **Strategic Action Plan** based on extensive stakeholder consultation and feedback. Over the past 12 months, we have made significant **progress against this plan**, delivering strong results.

This year, we prioritised understanding and quantifying the real benefits delivered for our stakeholders in ED2 to date, amounting to **£142 million**, and the future benefits we have unlocked based on our activities, totalling over **£2.5 billion**. We outline these benefits in Section 1 of this submission, based on a methodology developed jointly with other DSOs. For transparency, we also provide a separate **Benefits Quantification Methodology document** and **workbook** detailing the underlying calculations and assumptions.

Sections 2-5 of this submission describe the activities and deliverables this year that underpin these substantial benefits. While there are many achievements, I would like to share a few of my favourite highlights.

We are committed to data transparency and accessibility. We have listened to our stakeholders and provided the data and insights they need in the formats they prefer to support their decision-making. I'm particularly excited about our new Network Opportunities Map, which offers information on the available headroom at 190,000 substations across all voltage levels on our network. This tool enables developers to understand where they can connect and helps flexibility providers identify areas of opportunity for their services.

We have made a step change in our flexibility markets this year. **We have now registered over 162,500 flexible assets on our Market Gateway platform**, significantly increasing participation from domestic households. This growth has led to a more competitive market, resulting in cost savings for consumers. Moreover, **the average carbon content of the flexibility we dispatch is 1.50g CO₂/kWh**, compared to an average GB system carbon content of 125g CO₂/kWh, demonstrating our commitment to developing flexibility markets that are fit for a Net Zero future.

To meet the ambitious targets of CP2030, we must connect renewable generation and storage faster than ever before. Our Technical Limits initiative has made significant strides, offering **5.2 GW of accelerated connections, with 2.9 GW already accepted**. This remarkable progress has allowed us to reduce connection timelines for these projects by an average of 5.8 years, bringing us closer to a sustainable energy future.

Strong Governance underpins our success. We have made significant progress on control measures, particularly around Conflicts of Interest. **Our policy suite is now in place**, and the functional separation we've implemented supported by our DSO panel has strengthened our operations, positioning us as leaders in this space.

Our enhanced outage planning process has also yielded impressive results. **In 2024/25, we avoided 242 GWh of generation curtailment**, directly increasing revenue for Distributed Energy Resources (DERs) by £3.4 million. This proactive approach which maximises generator outputs during arranged network outages also delivers lower carbon emissions for the whole system.

These achievements reflect our vision to enable and coordinate a smart, flexible energy system that facilitates local decarbonisation for all customers and communities at the right time and the lowest cost. We look forward to your reflections on our progress and future initiatives.

Cathy McClay, Managing Director,
National Grid Distribution System Operator



01

Delivery of DSO benefits





Delivery of DSO benefits

Our Vision

To enable and coordinate a smart, flexible energy system that facilitates local decarbonisation for all customers and communities at the right time and the lowest cost.

Improvements in our approach

Last year, we outlined how we engaged with stakeholders to understand the benefits they expect from a DSO.

This informed the development of our [DSO Charter & Vision](#), our [Strategic Action Plan](#) and a set of [KPIs](#) that established a foundation for measuring and demonstrating the benefits of our DSO activities throughout RII0-ED2.

This past year we have identified and tracked ways in which our DSO activities deliver a measurable impact on our customers and stakeholders.

We've built upon our approach from last year, embedded best practice methods to measure impact, and aligned to [principles agreed through the DSO Collaboration Forum](#).

In this section we summarise our quantified benefits, highlighting our key achievements, and provide transparency on our methodologies and key assumptions.

We have tracked 12 activities that deliver value – these are numbered in the Theory of Change tables at the end of this section, and references made to them within the benefit section for each stakeholder group.

Our benefits delivered to date

We are proud to report **£142m of realised benefits** in ED2 to date and **over £2.5bn of unlocked benefits** to be realised in future years. Our unlocked benefits represent the largest proportion of our total impact and are largely driven by our work in increasing the effective capacity of the existing network and investing to strategically reinforce the network where it's most needed. By increasing the headroom on the network we have been able to accelerate connection of renewable generation.

How benefits will be realised in the future

A significant proportion of the outcomes we've achieved will only deliver benefits in future years, including beyond ED2. Most of our benefits currently fall under the **Unlocked** category and will become **Realised** in future years, as per the graph on the next page. This is in line with the long-term nature of many DSO activities where the work we do now facilitates creating a network to meet the needs of the future.

For some of these benefits to be realised, we are dependent on work by the DNO teams or wider sector stakeholders such as energy developers. We welcome this opportunity to collaborate and ensure we have the processes in place to drive delivery and track the realisation of future benefits.

Our Ambition benefits

In addition to the benefits we have Realised and Unlocked, we have **over £2bn of Ambition benefits**. These benefits are less certain than our Unlocked benefits and represent the potential value our activities could deliver in the future.

We have been conservative and rigorous in our approach to define our Ambition. We only consider outputs that are the result of a specific action already carried out by the DSO, such as a Technical Limit offer that has not yet been accepted by the developer. We do not include the benefit of all Technical Limits offers we could issue in the future.

Across the sector, the Performance Panel's feedback on last year's submissions set a clear expectation for greater rigour in demonstrating and quantifying benefits, particularly for consumers. In response, we have expanded our DSO benefits framework and documented our process to identify benefits and track these against counterfactuals; a [methodology document](#) outlining these is too detailed for this report but is published separately.





Our impact

£142m

Realised in
ED2 to date

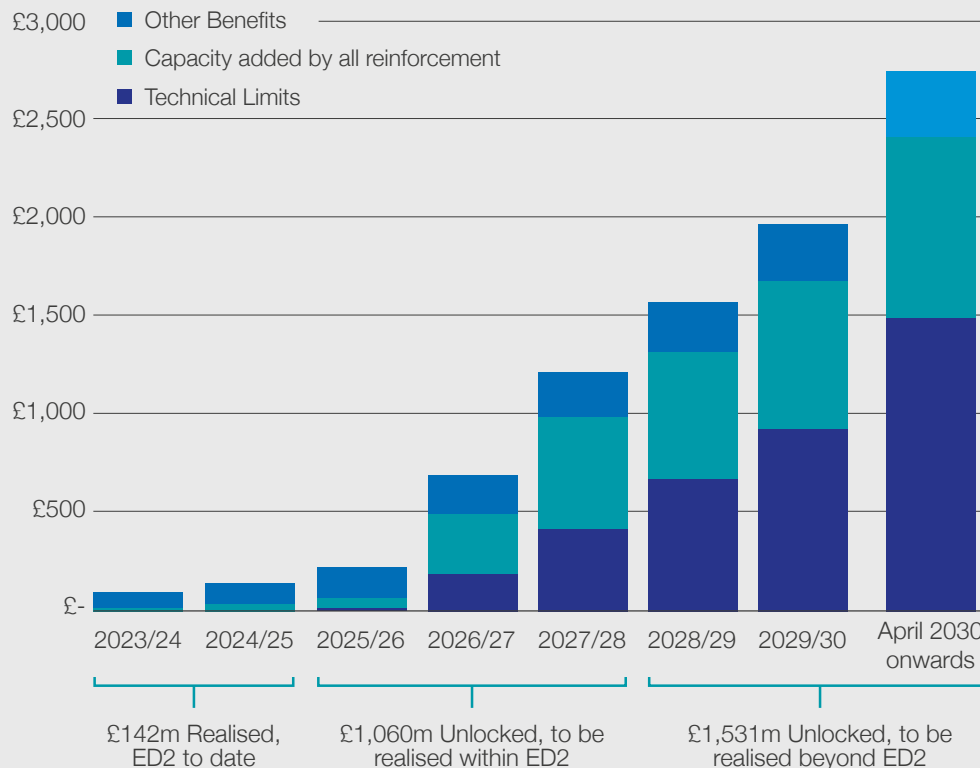
- **Realised benefits have been accrued to date from activities we have already delivered.**
- Most of our Realised benefits come from our DNOA process, via the completion of DSO-directed reinforcement and Flexibility.
- Our DSO is responsible for Curtailable Connections, but not currently Flexible Connections. Therefore we have not included reinforcement avoided through Flexible Connections in this submission.

£2,591m

Unlocked in
ED2 and beyond

- **Unlocked benefits are not yet realised, but we are confident they will be, based on activities we have already delivered.**
- Most of our Unlocked benefits come from Technical Limits acceleration offers being accepted by Distributed Energy Resources who are not yet connected.

Realised and Unlocked benefits by year (as of end of Y2)



Benefits by Stakeholder Group - We have categorised our benefits by common stakeholder groups defined in [the ENA common appendix](#).

Stakeholder	Definition	Benefits ED2 to date	
		Realised	Unlocked
Consumers*	NGED Consumers Benefits to customers in our licence areas e.g. savings on DUoS via a reduction in load-related expenditure.	£122m	£902m
	GB Consumers Benefits to all energy network customers across Great Britain, including our licence areas e.g. whole system cost reductions that lead to lower electricity bills across GB.	£8.4m	£1,574m
Facilitating Parties	FSPs and Aggregators Benefits to companies providing us with Flexibility e.g. revenue for Flexibility Service Providers (FSPs) & Aggregators.	£1.5m	£0.1m
	DERs Benefits to DER in our licence areas e.g. increased revenue from reduced curtailment.	£4.2m	£14.5m
	NESO Benefits to NESO that will flow to GB Consumers e.g. MW Dispatch.	Included in GB Consumers	
	Local Authorities Benefits to Local Authorities e.g. avoided effort in the development of Local Area Energy Plans.	£5.6m	£100m

* Consumers includes Domestic Customers and Commercial and Industrial Customers



Our impact per stakeholder group

The numbered circles refer to our Theory of Change tables on pages 09 and 10.

The following sections explore in more detail the benefits we have delivered for our key DSO stakeholder groups in this financial year.

1. NGED Consumers



£91.2m

Benefits Realised in 2023/24



£31.2m

Benefits Realised in 2024/25



£902m

Benefits Unlocked to date

Relevant KPIs:

- Reinforcement investment deferred through targeted use of flexibility.
- Volume of domestic asset capacity available through Market Gateway.
- Percentage accuracy of load forecast across our substations for the year ahead.

Performance highlights:

- We are leading the sector in domestic flexibility participation (see Section 3.2), including seeking to enable participation among PSR customers.
- We are on track to defer £137m of reinforcement out of ED2.
- We have invested in capacity where its most needed (see section 4.1).

How we value our impact - We have measured our DSO activities benefitting NGED consumers in three main ways:

Reduction in bills through deferred or avoided reinforcement 1 2

- **Deferral out of ED2 to date has led to Realised gross benefits of £67m and Ambition of £34m, with savings to be passed back to consumers through DUoS.**
- £65m of the £101m total relates to the schemes planned for deferral out of ED2 in our Business Plan and £72m relates to those we identified during ED2, with Totex savings of 100% and 50% respectively.
- **We have saved £364k in 2024/25 by directing uprated transformers to be installed at four primary substations due for asset condition replacements, maximising the lifetime of the assets NGED installs.**

Making capacity available where it is most needed 1

- **Our DNOA process drives economic growth in our four licence areas, working to make capacity available for all who need it.** In 2024/25, we directed 918 MVA of strategic reinforcement on our primary network into NGED's delivery program with benefits to our customers calculated as £656m.
- On the secondary network, we have high confidence that we are adding capacity in the right place and at the right time. Section 4.1 demonstrates that **NGED is targeting secondary reinforcement where assets are significantly loaded better than any other DSO.**
- We have calculated the benefits from this increased capacity by using a counterfactual of expected delays to future connections from having to pause Connect & Notify whilst urgent reinforcement works were completed.
- The utilisation of new capacity has been estimated based on network averages, and a lower-bound proxy of the cost of connections delays has been taken from [work by NERA](#) and National Grid's UK Market Analytics team. This lower-bound is £398k/MVA/year for demand (2022 prices which we have uplifted to 2023/24 prices).

Increased revenue from participating in flex markets 3 4

- **NGED customers are directly benefitting through Flexibility revenue payments.**
- For our Demand Turn-Up/Generation Turn Down trials we have identified that 27% of domestic customers offering us Flexibility are on our Priority Services Register (PSR), **with 9% of all local PSR customers offering us Flexibility through this trial.**
- Demand Turn-up is typically achieved through lower, or zero, unit pricing at the meter for their consumption during specified times.
- **Overall, 87% of flexibility spend was on domestic-only FSPs in 2024/25.**

Case study of strategic investment

- **We are investing now for the customers of 2050 and beyond.** At [Melton Mowbray primary](#), we have chosen to uprate imminent Asset Condition works from 24 to 40 MVA units, which will avoid replacing them again in 5-10 years.
- **These new assets will likely be operational beyond 2070**, and we retain the ability to add more capacity via a new primary substation in the 2030s or 2040s depending on load growth.



Our impact per stakeholder group

2. GB Consumers



£2.0m

Benefits Realised in 2023/24



£6.4m

Benefits Realised in 2024/25



£1,574m

Benefits Unlocked to date

Relevant KPIs:

- Amount of curtailment avoided through enhanced outage planning process.

Performance highlights:

- We avoided 242 GWh of curtailment of generation through our enhanced outage planning process (see section 5).
- 93% of flexibility volume accepted in our Long Term Procurement round in 2024/25 came from low-carbon domestic assets.
- We have connected 70MW of capacity ahead of transmission reinforcement through Technical Limits and MW Dispatch, with an expected 2,699MW of total accelerated capacity before end of ED2.

How we value our impact - We have measured our DSO activities benefitting GB consumers in two main ways:

Whole system savings from accelerated connections resulting in lower GB bills

6 7 8

- Technical Limits, Curtailable Connections and MW Dispatch accelerate DER connections, reducing both wholesale electricity prices and carbon emissions with £6.1m Realised in 2024/25.**
- Technical Limits has an average acceleration of nearly six years, and Curtailable Connections have been assumed to lead to one year of acceleration.
- This leads to bill reductions for all GB consumers whilst also supporting Clean Power 2030. **We have Unlocked £1,477m through Technical Limits, and £97.7m through Curtailable Connections.**
- We have valued these savings using a £100/MWh value (2023/24 prices) which is aligned to our **"Headroom – Whole System Thinking"** innovation project which quantified the system benefit of increased DER access.
- This work has been validated using independent analysis by National Grid's UK Market Analytics team.

Reduction in system carbon emissions

5 7 8

- Technical Limits has saved 7,639 tCO₂e to date, with an additional 668,872 tCO₂e expected by the end of ED2.** We expect the capacity connected through Technical Limits to increase roughly five-fold in 2025/26.
- Curtailable Connections offered in ED2 have Unlocked carbon savings of 91,756 tCO₂e to be Realised by the end of ED2.**
- Our Flexibility dispatch carbon intensity has decreased from 13.83g CO₂e/kWh to 1.50g CO₂e/kWh, saving 1,124 tCO₂e (worth £298k) in 2024/25.**
- This is calculated using the ENA carbon reporting methodology and HM Treasury Green Book carbon prices.

3. FSPs & Aggregators



£0.9m

Benefits Realised in 2023/24



£0.7m

Benefits Realised in 2024/25



£0.1m

Benefits Unlocked to date

Relevant KPIs:

- Volume of flexibility procured in our regions.
- Assets registered and pre-qualified on Market Gateway.

Performance highlights:

- We have launched our trial on Demand Turn-Up/generation turn down in 3 zones with plans to expand in future rounds (see section 3).
- We have course-corrected** by expanding the scope of our flexibility platform to assets to join through more routes. This enhances market liquidity.
- We now have 162,800 assets registered in our Market Gateway platform, totalling 1487MW of capacity.
- Of these, Piclo has contributed 6,038 assets totalling 302 MW.

How we value our impact - We have measured the DSO activities benefitting FSPs and Aggregators through:

Increased revenue from flexibility participation

3 9

- We procured 33GWh of flexibility availability in 2024/25.**
- We generated revenues of £655k for FSPs and Aggregators in 2024/25.**
- Our Demand Turn-Up/ Generation Turn-Down products trial is ongoing** in three locations this year across the South West, and East Midlands, helping us to match demand and generation, and totalling 0.7GWh of procurement.

Our expected spend is £100k. Dispatch is expected to begin in April 2025.



Our impact per stakeholder group

4. Distributed Energy Resources (DERs)



£0.8m

Benefits Realised in 2023/24



£3.4m

Benefits Realised in 2024/25



£14.5m

Benefits Unlocked

Relevant KPIs:

- Amount of curtailment avoided through enhanced outage planning process.
- Percentage of feedback received from Network Operation publications and regular engagement with stakeholders.

Performance highlights:

- We avoided 242 GWh of curtailment through our enhanced outage planning process (see Section 5).
- We have trialled an enhanced queue management process which has resulted in direct savings to a connecting customer.

How we value our impact - We have measured the DSO activities benefitting DERs through:

Increased revenue from reduced curtailment

10

- **Our enhanced outage planning process has increased revenue for DERs by £3.4m in 2024/25** through reduced curtailment due to increasing allowed generator outputs during arranged network outages. This is validated by DFES-driven load-flow contingency analysis.
- This is on top of the reduction in carbon emissions we claimed as part of or GB Consumer benefits.
- We valued this with an assumed capacity factor of 15% and using an analysis by NERA Economic Consulting of £87/MWh in foregone generator profits (2022 prices which we have uplifted to 2023/24 prices).

Reduced costs to connect from enhanced queue management process

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- **By proactively course-correcting with NESO, we are saving a connecting customer £14.5m in unnecessary transmission costs.**
- A Technical Limits customer had triggered a new supergrid transformer (SGT), however we identified that several schemes ahead of our customer had withdrawn.
- NGET agreed to re-model their requirements and agreed that the SGT was not necessary.
- This is the first time we have trialled this approach. **We hope to deliver additional outputs like this again in future to deliver maximum value for our customers.**

5. NESO

Relevant KPIs:

- Percentage of potentially conflicting decisions between NESO and DSOs which have an agreed process to manage them.
- Percentage of feedback received from Network Operation publications and regular engagement with stakeholders.

Performance highlights:

- MW Dispatch gives NESO the ability to manage power flows more efficiently across the transmission network (see Section 5).
- We have been instrumental in ensuring NESO's new responsibilities in Regional Energy Strategic Plans (RESP) are set up for success to deliver benefits for the stakeholders in our regions (see Section 4.1).

How we value our impact - We have delivered benefits to NESO through:

Reduced costs for NESO through MW Dispatch

6

- **MW Dispatch saves NESO significant sums on the Balancing Mechanism, delivering savings on consumer bills across the UK.**
- **We have 49.7 MW currently participating.**
- It allows NESO to reduce output of DER connected in the South West, to manage power flows and voltages on the upstream transmission network in real-time.
- The ability for NESO to resolve transmission constraints via DER on our network gives us confidence to allow more DER to connect to our network.

How we have contributed to RESP process

- **We have proactively supported the RESP process, harmonising cross-vector investment decisions alongside the gas distribution networks.** We hosted a workshop in July 2024 ahead of Ofgem and NESO-led engagement.
- We shared knowledge about existing network load forecasting activities and improvements that could be undertaken as part of the RESPs.
- **Our Strategic Engagement Officers have helped Local Authorities understand changes to expect following the introduction of RESPs.**
- This has been discussed in all of our Network Development Plan workshops.



Our impact per stakeholder group

6. Local Authorities



£0.4m

Benefits Realised in 2023/24



£5.2m

Benefits Realised in 2024/25



£100m

Benefits Unlocked to date

Relevant KPIs:

- Percentage of local authorities in our licence areas that require our support, and we are supporting to create LAEPs and decarbonisation initiatives.

Performance highlights:

- We have supported Local Authorities in completing 14 LAEPs in 2024/25, as well as another 52 LAEPs that are still in progress.
- We have also provided information, data and tools to 18 other decarbonisation projects, such as Net Zero Industry Wales, Mission Net Zero Bristol and Leicestershire CAN.

How we value our impact - Our DSO activities have benefitted Local Authorities through:

More efficient Local Area Energy Plans and decarbonisation initiatives

12

- We have driven LAEP benefits of £23.9m in 2024/25, with £5.1m of this Realised.**
- We have used an estimate from Energy System Catapult to value a more efficient LAEP process and so calculate the benefits from the support we have provided.
- We have also used internal data on the estimate of effort spent on specific decarbonisation projects to estimate additional value we have provided to Local Authorities, leading to another £0.2m of Realised benefits in 2024/25.

Societal impact from contribution to local decarbonisation efforts

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- Our work contributes to local decarbonisation, resulting in quieter streets, reduced congestion, cleaner air and warmer homes.**
- This is estimated as £81.4m of Unlocked benefit for our 2024/25 work.**
- We have assumed that 1% of the total societal benefits come from the additional data and tools we provide to Local and Combined Authorities to support their decarbonisation initiatives, including LAEPs.
- To estimate this, we have used research by Innovate UK about the value of decarbonisation that follows a place-specific strategy (such as that developed through individual LAEPs), compared to a place-agnostic approach which is aligned with the UK's Net Zero Strategy.
- Our sensitivity analysis confirms that decarbonisation benefits unlocked are sensitive to key assumptions for which there is not much available research at present. However, we believe it is important to provide an initial estimate to show the potential social value we are contributing to delivering, which can then be adjusted as more research becomes available.

Mission Net Zero Bristol



- Mission Net Zero is a Bristol project aimed at reducing carbon emissions and making the city more sustainable. Funded by Innovate UK, it's part of the Net Zero Living Programme. As a project partner, we help ensure access to essential data for informed decisions on local climate action. Our contributions ensure accurate network understanding, enabling effective investment decisions. We've delivered 229 Net Zero surgeries, offering advice to stakeholders in their decarbonisation efforts.

Leicestershire CAN (Collaboration to Accelerate Net zero)



- Leicestershire CAN is a £2.56m project to accelerate the region's net zero journey. Funded by Innovate UK, it addresses emission reduction challenges and provides a replicable model for other UK local authorities. As project partner, we ensure the necessary data is accessible for informed decisions, helping to overcome barriers and enabling the successful delivery of climate action projects. Our contribution ensures that the electricity network's opportunities and limitations are fully understood, guiding strategic investment decisions.

Small Scale Decarbonisation projects



- We participated in the Forest of Dean's **Energy Climathon**, joining over 40 local stakeholders and industry experts to develop solutions for decarbonising the district. We provided insights into our role in local decarbonisation and collaborated on five actionable solutions. Our involvement also led to supporting the creation of the Forest of Dean's solar guide, empowering communities and businesses with the resources to invest in solar energy for a greener future.



Our impact per stakeholder group

6. Local Authorities

Welsh LAEPs, Planning Transport Decarbonisation in Wales, Net Zero Industry Wales

Over the past 18 months, we have worked closely with 13 local authorities in Wales, supporting the development of their Local Area Energy Plans.

We provided technical guidance and shared data to create a clear picture of the future energy system in Mid and South Wales, ensuring consistency with our Distribution Future Energy Scenarios (DFES).

This collaboration has strengthened relationships and led to meaningful action plans for net zero. We've also analysed local targets against DFES, reflecting local ambition in our forecasts.

In partnership with Transport for Wales (TfW), we have contributed to cross-vector planning for EV charging infrastructure and bus decarbonisation. By engaging early, we've ensured that transport decarbonisation and EV charging needs are integrated into our strategic planning, supporting future network investments.

Additionally, we've engaged with Welsh industry groups to address the decarbonisation of commercial vehicles.

By collaborating with the Welsh Department of Transport and industry stakeholders, we've provided valuable input for a strategy to decarbonise commercial transport in Wales.

These engagements demonstrate our proactive approach to supporting local and national decarbonisation goals, ensuring our network is aligned with the needs of stakeholders across Wales.



"Working with National Grid DSO has been really useful. It has helped our understanding of the challenges and opportunities of decarbonising electricity, unlocking network constraints, and identifying where investment in the grid should be prioritised."



Powys County Council

"A key stakeholder in the energy transition, and it was great to have their involvement in the development of potential solutions for our District. The Council and other partners are now working on a number of initiatives developed during the Climathon and we look forward to implementing solutions together."

Forest of Dean District Council

"Working with National Grid DSO has been really useful. It has helped our understanding of the challenges and opportunities of decarbonising electricity, unlocking network constraints and where investment in the grid should be prioritised."

The Regional Energy Lead for Growing Mid Wales supporting Ceredigion and Powys County Councils



Year 2 theory of change – consumers

	Activities		Outputs	Outcomes	Benefits	Benefit Type	Benefit Quantification Y2*	DSO Role
NGED Customers	1	DNOA process	DNOA outcomes recommending strategic reinforcement	Directing of reinforcement leading to capacity released	Economic value from customers being able to connect on time in NGED's licence areas	Direct	Realised - £22.5m Unlocked - £656m	Role 1: Planning and network development
			DNOA outcomes recommending operational mitigations	Adding capacity with reduced and/or deferred reinforcement costs	Reduced DUoS for NGED customers		Unlocked - £12.2m	
			DNOA outcomes recommending Flexibility	Adding capacity with reduced and/or deferred reinforcement costs	Economic value from customers being able to connect on time in NGED's licence areas		Realised - £7.0m	
	2	Uprating on replacement driven by Asset Condition	Assets replaced via conditional replacement	Reduction in long-term reinforcement costs by reinforcing assets whilst being replaced due to asset condition	Reduced DUoS for NGED customers		Realised - £1.6m	Role 1: Planning and network development
							Unlocked - £0.4m	
							As per FSPs & Aggregators	
3	Demand Turn-Up/ Generation Turn-Down trial	Domestic (including PSR) customers incentivised to use more energy when it is locally abundant	Resolving generation constraints on the network with reduced and/or deferred reinforcement costs	Domestic (including PSR) customers near generation having lower bills	Realised - £0.6m of flex spend on domestic-only FSPs**	Role 3: Market development		
4	Market Gateway facilitating domestic Flexibility	Assets registered, pre-qualified and participating on Market Gateway	Increased flexibility market participation among customers, including PSR customers	Revenue for domestic customers from participation in flexibility services				
GB Customers	5	Market Gateway facilitating low-carbon Flexibility	Low carbon/carbon-neutral assets registered and pre-qualified via Market Gateway	Low carbon Flexibility dispatched and delivered	Carbon savings relative to carbon-intensive Flexible assets	Indirect	Realised - £0.3m (1.1 ktCO ₂ e)	Role 3: Market development
	6	MW Dispatch	Connections capacity accelerated	Capacity released for new connections to the network	Economic value from increased renewable generation	Direct	Realised - £4.4m	Role 2: Network operation
	7	Technical Limits	Connections capacity accelerated	Capacity released for new connections to the network	Economic value from increased renewable generation	Direct	Realised - £1.8m Unlocked - £557m	Role 2: Network operation
					Carbon savings from increased renewable generation	Indirect	Realised – 3.7 ktCO ₂ e Unlocked – 215 ktCO ₂ e (by end of ED2)	
	8	Curtailable Connections	Connections capacity accelerated	Capacity released for new connections to the network	Economic value from increased renewable generation	Direct	Unlocked – £6.1m	Role 2: Network operation
					Carbon savings from increased renewable generation	Indirect	Unlocked – 9.1 ktCO ₂ e (by end of ED2)	

* This is the resultant change from Y2 activity only. Unlocked figures in the rest of the document are Unlocked benefits from Y1 & Y2 combined, as they stood at the end of Y2. Separate figures for Y1 & Y2 will be given in our methodology.

** Note this £0.6m is counted also in the £0.7m of revenue for FSPs in the FSPs & Aggregators section. We have avoided double-counting when calculating total benefits, and this figure does not appear in the totals for NGED consumers.

*** Prices are given as nominal, benefits are gross, and the 2023/24 price base is used. The exception is Activity 2 which is a net present value in 2023/24 prices.



Year 2 theory of change – facilitating parties

	Activities		Outputs	Outcomes	Benefits	Benefit Type	Benefit Quantification Y2*	DSO Role
FSPs and Aggregators	3	Demand Turn-Up/ Generation Turn-Down trial	FSPs & Aggregators being paid to increase demand and/or reduce generation on the network	Resolving generation constraints on the network with reduced and/or deferred reinforcement costs	A new revenue stream for FSPs & Aggregators	Direct	Unlocked - £0.1m	Role 3: Market development
	9	Flexibility procurement	Assets registered, pre-qualified and participating on Market Gateway	Increased flexibility market participation	Revenue for FSPs from provision of flexibility services		Realised - £0.7m	Role 3: Market development
DERs	10	Enhanced outage planning process	Avoided curtailment during outages	Increased distributed generation	Increased revenue for generators	Direct	Realised - £3.4m	Role 2: Network operation
	11	Enhanced queue management process	Avoided purchasing supergrid transformer due to connecting customer	Avoided unnecessary spend on network equipment	Reduced costs for connecting customer		Unlocked - £14.5m	Role 2: Network operation
NESO	6	MW Dispatch	NESO able to reduce output of distributed generators in the South West	NESO able to manage transmission constraints at lower cost	Reduced whole system costs, to be passed through to customer bills	Direct	As per GB Consumers	Role 2: Network operation
Local Authorities	12	Engagement with Local Authorities	Local authorities engaged	Local authorities supported in advancing local decarbonisation plans	Reduction in costs for LAs in implementing LAEPs and other decarbonisation initiatives	Direct	Realised – £5.2m	Role 1: Planning and network development
					Societal benefits from LAEPs contributing to net zero	Indirect	Unlocked - £100m	

02

Data and information provision





Data availability and quality

Access to high-quality, accurate data is crucial for informed decision-making. As the DSO, it enables us to plan the future network. It also helps stakeholders like Local Authorities, developers and other energy companies, build their investment cases and long-term plans.

This year, we've expanded the range of the data we share. As a result of stakeholder feedback, we have enhanced the quality, granularity and scope.

Our data-centric approach is set out in our [Digitalisation Strategy](#). Our systems and models are directly informed using data and information shared by third parties. We listened to our stakeholders and have learned they don't just want raw data; they need to draw insights, so they can make decisions. This is why we've improved our datasets, simplifying the data, summarising key points and providing support and training on how to best use it.

We publish comprehensive datasets through platforms like our new [DSO Resource Centre](#) and our [Connected Data Portal \(CDP\)](#), which now hosts 88 datasets. All datasets are also available via an Application Programming Interface (API), making it easier to access, download and integrate data into our stakeholders' processes.

Each dataset contains metadata and data dictionaries to ensure our datasets meet industry standards, like Ofgem's Data Best Practice. We have increased the update frequency of some datasets to ensure stakeholders have access to the latest data, such as our flexibility market or the data underpinning our new [Network Opportunity Map](#), which we discuss later.

Core datasets driving improved customer insights

Connections Planning	Curtailment Forecasting	Flexibility Markets	Dataset	Customer Insight
			Network Opportunity Map	Over 190,000 nodes detailing the capacity available for NGED's entire network to support new connections activity. As an industry first, we also publish capacity available with and without the connections queue, allowing customers to see the potential from connections reform.
			Flexibility Dispatch Data	Full transparency on flexibility market actions is provided by publishing every event including the time, volume, price and participant for trade results and dispatched flexibility.
			Live Boundary Power Flows	This includes the net demand and generation by technology type every five minutes for all major nodes of our network, allowing stakeholders to understand the power flowing across it in real time.
			Transmission Interface Data	This data gives customers visibility of transmission headroom, queue and indicative timescales for connection for all our Grid Supply Points.
			Common Information Model (CIM) Data Models	Full CIM Datasets for our EHV network across all four licence areas
			Aggregated Smart Meter Data	We publish aggregated smart meter data at secondary substation and LV feeder level. This covers active and reactive consumption.
			Technical Limits	Detailed information is provided on the power envelope agreed between NGET and NGED at the Grid Supply Point boundary to accelerate connection of embedded generation
			Network Headroom Reports	Data on each Primary network location is published which details available capacity for new demand and generation connections all the way out to 2050.
			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 ten minute intervals.
			Generator Portal	We inform connected generators of outages or curtailment that will affect them through this portal. Historic outage data can also be viewed here.
			Historical Asset Power Flows	In addition to the live data, we publish half hourly averaged transformer flows (in MW or MVA depending on available monitoring) to all Primary substations.
			DFES Profiles	Forecast technology volumes, peak power forecasts and underlying customer behaviour assumption datasets for scenario planning activities
			Distribution Substation Load and LCT Data	11kV distribution transformer datasets, detailing location, peak demand and headroom availability to support LV customer connections



Committed to data transparency

Our stakeholders have been clear - they desire more data, and we've responded by publishing open data across all our core DSO roles.

For some of our stakeholders, a lack of technical expertise in using the data was a barrier to participation. So, we have created summarised data, with key points that can be extracted and more easily communicated.

"When I previously looked into our assets it didn't look like there was much value we could add, but with visibility improvement the value has improved."

Energy Consultant feedback during Delivering Now, Thinking Future event

The National Infrastructure and Service Transformation Authority used network modelling and data from our [DFES Customer Behaviour Report](#) in their Future of Distribution report, citing its high level of transparency and accessibility.

Our collaboration with 14 Local Authorities in Wales to support their LAEPs reflects our commitment to providing tailored, useful data. By sharing technical data and integrating it into our DFES, we've provided clear insights that support local decision-making. To support Local Authorities, we launched the "Switched On" quarterly newsletter reaching nearly 300 local officers.

"It's a quick way to keep on top of key pieces of work and the level of detail is pitched to ensure it's accessible to all levels of technical knowledge"

Tom Yeo, Powys County Council

We've led the industry in real-time transparency, offering live updates on GSP, BSP, and Primary substation loadings every five minutes. Stakeholders can interact with net demand, generation, and electricity storage data, with aggregated consumption and generation values displayed on our website, offering quick access to key data points, such as maximum solar output or wind power.

We store historical load flow data in 24-month batches for further analysis at a regional or specific asset level. Our commitment to transparency, combined with our leadership in power systems modelling and data sharing, continues to drive the energy transition forward. Alongside our work on the GB-CIM standard, we're focused on developing the accessibility of our data sharing platforms, ensuring that all stakeholders, no matter their size or expertise, can access and benefit from the data and insights we provide. Data and information provision cuts across all the DSO roles. Within the different key and supporting functions of the DSO we have focused on a number of improvements for our data and information over the past year.

Committed to data improvement

Maintaining data across the 190,000 substations in our region is a big challenge. It requires continuous updates, and a commitment to data quality. This has led us to develop data quality inspection rules, particularly across the secondary network assets, which are highly standardised and high in asset volumes. We have developed a cloud-based asset data twin, used to run data quality and integrity checks, which helps us proactively identify potentially erroneous datapoints and bias.

FACT:

Despite rural areas like the South West having fewer customers than our Midlands regions, it has a higher number of substations and circuits!



Driving Performance

Following continuous engagement with our stakeholders, we published our annual targets in Spring 2024 and committed to reporting our KPIs on a quarterly basis. These KPIs were developed to show how we are delivering against the commitments made in our DSO Strategic Action Plan.

Transparency: Publishing quarterly summaries of our performance against our KPIs on our website enhances transparency and provides clear and accessible information about our progress. We invite feedback from stakeholders to help identify areas for improvement.

Stakeholder Engagement: These measures are used to engage with our stakeholders and ensure that our KPIs remain relevant to their priorities and evolving needs and expectations.

Internal Monitoring: We conduct monthly internal reviews of our progress against these metrics to drive performance in the DSO. These reviews involve detailed analysis of our KPIs, identifying trends, and addressing any areas of concern. By maintaining a rigorous internal monitoring process, we are efficient, effective and maximise consumer benefits.

Independent DSO Panel: We regularly meet our independent panel, who provide ongoing feedback and strategic challenges to our DSO activities. The panel, composed of industry experts and stakeholders, offers valuable insights and recommendations. This ensures we align with best practices and industry standards, and that our strategies are robust and forward-thinking.

DSO Q4 2024/25 External Performance Scorecard

Role	Key Performance Indicator (KPI)	23/24 Performance	24/25 Performance	24/25 Target	Outturn RAG
Planning and network development	Percentage of outcomes in our annual investment report (DNOA) which recommend flexibility	22.5%	24.4%	23%	Green
	Percentage accuracy of load forecast across our substations for the year ahead	90%	90%	94%	Orange
	Percentage of local authorities in our licence area that require our support and we are supporting to create LAEPs and decarbonisation initiatives	93%	100%	100%	Green
Network operation	Percentage of potentially conflicting decisions between NESO and DSOs which have an agreed process to manage them	<1%	8.3%	9%	Orange
	Percentage of feedback received from Network Operation publications and regular engagement with stakeholders	-	-	85%	White
	Amount of curtailment avoided through enhanced outage planning process	58GWh (5% of total curtailment)	242GWh	100GWh (10% of forecast curtailment)	Green
Flexibility market development	Assets registered and pre-qualified on Market Gateway	70,000	162,800	100,000	Green
	Percentage of feedback received from Flexibility Market Development publications and regular engagement with stakeholders	-	-	85%	White
	Percentage of flexibility available vs requested	34.6%	37.73%	47%	Red
	Reinforcement investment deferred through targeted use of flexibility	£80m	£105m	£90m	Green
	Number of flexibility use cases where the revenue stacking is not possible	61%	61%	55%	Red
	Volume of flexibility procured in our regions	17GWh	19.8GWh	19GWh	Green
	Volume of domestic asset capacity available through Market Gateway	166MW	542MW	237MW	Green

We are committed to being proactive in how we measure and evaluate our performance. These metrics represent the outturn of measures introduced in 2024. Our latest DSO Benefits reporting utilises more robust and rigorous measures. See [here](#) for more about our KPIs.



Flexibility Market Development and Network Operations

Flexibility Market Development and Network Operations are inextricably linked.

Last year we made several changes to ensure the data we publish is clearer and more useful, better aligning it to stakeholder needs.

This year, we have gone further, publishing more flexibility market opportunity data than ever before and linking that to visibility of the tangible revenue being generated in these areas.

“Reducing curtailment would be a big one. Just the number, if we organised flexibility, it would promote more connections and people wouldn’t need to worry about power being lost”.

Energy Consultant, Stakeholder feedback during Delivering Now, Thinking Future event

Case Study: Improving Flexibility Opportunity and Decisioning Data Sets

✓ Accessibility	✓ Scope	Granularity	✓ Transparency	Accuracy
<p>We’ve introduced a simplified, more frequent, overview of flexibility revenue opportunities across zones. Making it easier to understand what is needed in both our short-term and long-term markets.</p> <p>A new quarterly short-term market dataset helps FSPs access details more easily. We also created a better value calculator to help stakeholders gauge the potential value of participating in the market.</p> <p>We’ve taken learnings from NESO’s Ancillary Market Data Portal to shape the information we share with market participants, demonstrating our commitment to improve the coordination between markets.</p> <p>To improve transparency in our Operational Decision Making, we publish weekly dispatch data. This shows which services we’ve utilised in both long-term and short-term markets and aligns with our service selection methodologies. Through webinars and ongoing engagement, we’ve refined our approach.</p>		<p>Our website updates have made it easier for stakeholders to navigate and find the data they need. Previously, we only published forecast requirement data, which stakeholders found useful, but felt it lacked clarity. Now, we publish long-term trade data ahead of competitions, detailing volumes, ceiling prices, and times of day. This gives market clearer insight into our needs. Our short-term dataset is updated quarterly, reflecting our position after long-term trading and real-time forecasts.</p> <p>We’ve increased the frequency of short-term flexibility result data, moving from annual to fortnightly updates and planning for weekly and then daily updates once day-ahead markets are introduced in 2025.</p> <p>These changes have led to greater engagement, with more new entrants and increased competition. This has made the market more competitive, lowering costs and improving system efficiency for consumers.</p>		

Case Study: Responding to Stakeholder Feedback: Curtailment Reports

✓ Accessibility	Scope	✓ Granularity	✓ Transparency	Accuracy
<p>To assist the acceleration of connections under the Technical Limits initiative, we provided all customers with eligible connections an indicative curtailment report. To ensure the accuracy and usefulness of these reports, we led the sector by developing an enhanced curtailment methodology, building on the industry standard, known as DCP404. This allowed our estimates to consider not one, but several network constraints, ensuring the reports better reflect the real-world system. Following this, some stakeholders requested additional information to help them better understand their levels of curtailment and build stronger investment cases.</p> <p>We supported them through provision of raw data as well as providing a comprehensive methodology statement, which shares underlying assumptions and our methodologies so the analysis can be replicated.</p>		<p>This demonstrates our commitment to transparency via open data and was particularly well received by customers with Energy Storage Systems (ESS). Through successive tranches and engagement with developers, we further developed our assumptions relating to ESS. This allowed us to provide incrementally more accurate assessments of curtailment, which was well received by customers with ESS schemes. It has since become our standard approach to treatment of ESS.</p> <p>“I wanted to let you know the DSO were very helpful in helping me unpack the outage/curtailment piece for my generation scheme. They made the very complex process rather simple.”</p> <p>DSO Stakeholder subject to Technical Limits</p>		



Planning & Network Development

We have focused our activities in planning and network development on increasing the scope and accessibility of the information we provide.

Our stakeholders have asked us to demonstrate the 'golden thread' of information flow throughout our system planning and options assessment process. This is built on adapting the output of our Network Development Plan to specific stakeholders to present our information in a clear and concise format and new ways to access our data.

"National Grid DSO provided National Highways and Office of Zero Emission Vehicles (OZEV) with a bespoke report on the strategic investment planned in each of the network areas that contains a Motorway Service Area. This compared the current forecasts to more up-to-date figures National Highways have modelled, and indicated if the planned strategic reinforcements would change as a result.

The way that this data was presented was accessible and clear, which really helped with National Highways and OZEV's understanding of the costs, timelines and complexity of network development required to support EV charging at Motorway Service Areas, this will in turn support the transition to zero emission vehicles and help the UK reach net-zero by 2050".

**Dr Russell Fowler,
National Highways**

These case studies show a clear improvement over previous years as we continue to make our data more user-friendly.

Case Study: DFES Customer Behaviour Report

Accessibility	✓	Scope		Granularity	✓	Transparency		Accuracy
<p>In January 2025, we published our DFES Customer Behaviour Report, providing stakeholders with critical insights into customer behaviour assumptions used in our forecasting. The data includes load profiles for technologies like EVs and heat pumps, segmented by flexed and unabated customer profiles.</p> <p>Projections are available annually, helping stakeholders track changes. We also provide data on energy consumption and generation for each Local Authority, under different DFES scenarios.</p> <p>Peak demand projections, broken down by season, time, and power (MW), support network planning.</p>			<p>We ensure relevance by incorporating scaling factors for energy efficiency and technology changes. In addition to the DFES map, which visualises these projections, stakeholders can access the data via Application Programming Interfaces on our Connected Data Portal to analyse it and gain a deeper understanding of forecasted volumes and network growth.</p> <p>The 2025 report expands on the previous year's data, adding new load profiles for agriculture, aviation, maritime, and rail. We have also created enhanced load profiles for our existing substations using machine learning models and we have updated our heat pump and EV models using the latest smart meter data.</p>			<p>Many other DNOs don't provide this level of detail and our DFES Customer Behaviour Report highlights our commitment to transparency, enabling better, data-driven decision-making for the energy system's future. With our open approach, we set the standard for customer behaviour data in the industry.</p> <p>"Based on the consultation work being done, DSO planning assumptions will be critical to providing clear data for the RESPs."</p>		
						NESO		

Case Study: Responding to Stakeholder Feedback: Planning Data

✓	Accessibility	Scope	Granularity	Transparency	Accuracy
<p>This year we improved the accessibility of two planning datasets in response to feedback from stakeholders.</p> <p>Our DFES Local Authority Excel Workbook provides a tailored user-interface in an easy-to-use Excel format, addressing feedback from stakeholders who found the existing CSV and API interfaces difficult to work with, especially for non-technical users.</p> <p>Previously, we only published raw data for download with no guidance, which limited how Local Authorities could utilise the information.</p>		<p>The new workbook simplifies data interaction, ensuring that local authorities and other stakeholders can more easily access and use DFES data to understand anticipated growth on the network across different scenarios.</p> <p>The workbook went live in February 2025, to directly address the concerns raised by Local Authorities about the usability of the previous format.</p> <p>We developed bespoke NDP reports specifically for MSAs across our licence areas. National Highways and OZEV are the primary beneficiaries of this service, and it helps them make better-informed decisions regarding network constraints.</p>		<p>Unlike last year, when we didn't offer this service, the tailored reports now provide a single, central source of information, making it clearer for MSAs to review and understand how the projections of demand at MSAs affect our network development.</p> <div><p>"I would say we've come a long way in the last two years. Compared to where we were, what's changed is local area energy planning."</p><p>Combined Authority/ Local Enterprise Partnership</p></div>	



System Models and Data

Our DSO System Models & Data function is not a role prescribed by Ofgem. However, it is a key enabler for both DSO and DNO activities, as well as external stakeholders.

Underpinning all of our DSO functions is the need to undertake engineering analysis, which depends on our system models and analysis capability.

This year we focused on improving the granularity and accuracy of our core asset data. We also collaborated with other DSO/DNOs to build system models which reflect the shift away from individual networks.

We intend to continue prioritising the development of our system models and analysis capability, as reliance on them is expected to grow as we undertake analysis of increasing complexity.

Improving our Foundations: Network Model Improvements

This year we implemented a series of comprehensive network model improvements to ensure they meet the evolving needs of the DSO and our stakeholders.

This has involved proactively working with asset and data owners to collate and interpret data for thousands of assets, and ensuring this information was made available in our system models. Further, we have worked with the DNO to build processes to address gaps in the DNO's asset data and improve data quality standards.

We have aligned our outputs with the Ofgem Data Definitions set out by the Long-Term Development Statement (LTDS) Reform working group, ensuring that the information we provide is consistent with industry standards.

Facilitating Data Exchange: GB-CIM

As part of our commitment to data transparency and accessibility, we go beyond [publishing our network models](#) in our LTDS and publish them using the CGMES 3.0 CIM standard. This makes our models directly assessable in several major power system software packages.

We recognise our stakeholders' needs for additional scope and granularity in our network models, which is why we are actively working with other DSOs and industry partners on the development and implementation of a new GB-specific extension of CGMES 3.0, known as GB-CIM.

This includes a contributing role in the governance of this new standard as well as the establishment of an enduring governing body. As part of our commitment to advancing data quality and accessibility, we plan to publish models in the new GB-CIM format later this year, significantly enhancing the scope, granularity, transparency and accessibility of the data we provide.

Case Study: Driving Insights: Network Opportunity Map

✓	Accessibility	✓	Scope		Granularity	✓	Transparency	✓	Accuracy
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We launched an updated [Network Opportunity Map](#), designed to offer stakeholders a more comprehensive view of available capacity and headroom across our network. The new map combines our previous Network Capacity Map and EV Map into a single unified platform. This map provides a clearer and more detailed view of the available headroom at over 190,000 substations and across all voltage transformation levels. It also features an improved user interface to make it easier for stakeholders to navigate and access the information they need.

Stakeholders asked for a single map that would provide a more useful and cohesive view of network capacity. The methodology used in our previous Network Capacity Map was found to be too simplistic, not reflecting some of the complexities of system planning, specifically when considering upstream network constraints. The updated map increases both the accuracy and granularity of information on available headroom i.e. what stakeholders can connect to our network.

For the Primary network, we show the connected and contracted positions for both generation and demand, which enables stakeholders to see what capacity is currently available and what is already committed to new connections.

For the Secondary network, we have added details about connected demand and headroom (MW), a figure that was missing from the previous EV map. This improvement builds on the [methodology we trialed and shared](#) in the [Network Development](#)

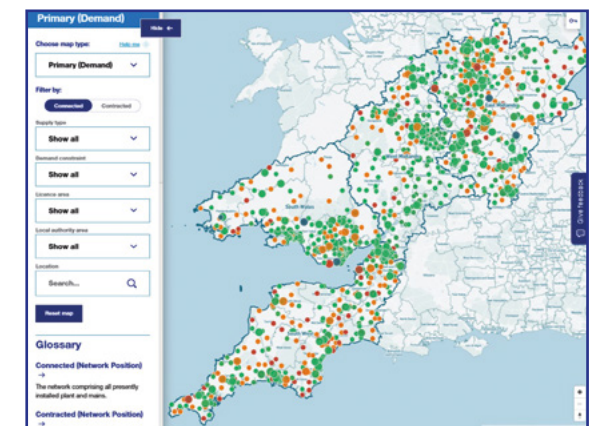
Plan Headroom Report.

The Network Opportunity Map offers stakeholders the ability to search for available capacity in their areas.

This tool provides a clearer picture of both connected and contracted capacity, enabling stakeholders to make more informed decisions about new applications and network developments.

"A red light for one company could be seen as an opportunity by another. The colours mean different things for different companies. It can indicate the health of the network."

Stakeholder feedback during Delivering Now, Thinking Future event



03

Flexibility market development





Flexibility market development

Introduction

Flexibility markets provide vital support to both our System Planning and Network Operations roles delivering lower costs for our customers.

The use of flexibility to reduce power flows across the network at peak times allows us to defer network investment. Closer to real time, flexibility can be used to support vital maintenance outages by increasing demand, allowing us to reduce the curtailment of renewable generation.

Over the past year, we've made significant strides in scaling our flexibility markets. Delivering tangible results that drive down costs to customers, enhance network capacity, and contribute to UK's net zero transition. We're leading the way across the industry, and we've done this by:



Growing market opportunities

We've put **63 HV and 744 LV flexibility locations** to market, signalling market value **upwards of £5 million**, demonstrating a clear commitment to scaling our flexibility offerings.



Simplifying our processes

Implementing full alignment with the **ENA Open Networks standardised outcomes**, including qualification, settlement, contracts, and stackability, all aimed at streamlining flexibility participation.



Improving market accessibility

Through the development of our **Market Gateway platform**, and enhancements to the market data we publish, we've made flexibility services more accessible to a wider range of participants.

These efforts have already shown real impact.

Compared to our peers we have the largest number of assets registered on our flexibility platform, in the last year this has more than doubled from approximately 75,000 to 162,800.

90% of this participation is from domestic households and 78% of the registered assets are EV charge points.

Equating to over 125,000 EVs registered to provide us with flexibility, this represents more than half of all EVs currently connected on our network.

Our flexibility opportunities span all four of our licence areas. This year, we **actively operated flexibility in 631 locations** across both HV and LV.

Furthermore, we've improved our LV assessment processes to include better informed modelling assumptions, increasing opportunities for LV participation - particularly within our East Midlands region where we have existing large customer numbers and further load growth forecast for areas in proximity to developing infrastructure and transport routes.

	East Midlands	West Midlands	South West	South Wales
HV locations	24	8	26	7
LV locations	438	71	31	26

The value of this growth is considerable:

- Domestic **participation is primarily low-carbon**, reducing the carbon intensity of our dispatches and driving progress towards a cleaner energy system.
- Granular **domestic flexibility improves dispatch efficiency**, reducing the need for over-procuring flexibility and optimising system operability.
- **Households benefit directly from participating**, with significant savings from their flexibility contributions.

Due to the increase in assets registered with us, **our flexibility markets are now becoming more competitive**. In our last long-term procurement, we awarded flexibility in HV zones at prices 34% lower than our ceiling prices, and in LV zones at 18% lower.

This resulted in savings of approximately £75,000 which pass directly to our customers. This is a great example of how increased participation leads to more efficient markets, driving down costs.

We have

162,800

flexible assets

registered in our Market Gateway





Flexibility market development

We no longer see flexibility as an emerging market. Liquidity is driving competition, and our markets have become more mature.

As industry leaders we are using flexibility to unlock the benefits of a more efficient energy system. For example, by simplifying the **revenue stacking** process we enabled FSPs to unlock more value from their services, and in turn increased market competition. The maturity of our markets enabled us to take an important step in reviving **Demand Turn-Up (DTU) services**.

Where our early efforts to operate DTU in 2020 saw little market response, in 2024 we successfully recruited competitive participation in three DTU zones which are actively unlocking more capacity. These services represent an opportunity to use flexibility to extend network capacity and support further decarbonisation. These are both enablers to deliver the flexibility services we need to decarbonise our energy system.

With the expansion of flexibility participation, our system planning has become more effective. We've enhanced our ability to quickly respond to changes and make decisions that allow us to procure flexibility with confidence, deploying the right combination of flexibility and build solutions to maximise system value.

Of the 204 HV constraints assessed last year in our DNOA, 61 now rely on flexibility for capacity deferral or pre-reinforcement.

We project that by 2028, 72 more HV constraints will require flexibility services. As we move into ED3 with a change from Flexibility First to a more proactive building of networks we still see an important role for flexibility markets in managing the risk associated with delivering a large delivery program. The markets we are delivering now are essential for successful delivery of CP2030.

Our ongoing efforts will continue to drive the adoption of flexibility, enabling us to better direct investment, minimise costs, and optimise network planning.

The focus is shifting from simply deferring reinforcement to broader flexibility applications for system management, delivering greater value to the grid and consumers alike.

Digitisation underpinning our markets

Market Gateway improvements and digitalisation of trades.

Unlike other DSOs we have our own in-house system, Market Gateway, which underpins our flexibility markets. This was initially developed because, as an early leader in flexibility, there was no suitable off-the-shelf solution available when we were establishing our flexibility markets.

This year we did a comprehensive review of our digital strategy for flexibility markets, considering alternative external offerings.

We have decided to continue with Market Gateway as alternatives had significant weaknesses, particularly in areas such as contract management and asset registration - areas we consider particularly important for our stakeholder experience.

Through continuous improvements to the Market Gateway delivered by our dedicated in-house development team, we've taken another major step towards scaling flexibility services.

Updates, such as the soft launch of digital trading and improvements in asset registration, simplify processes and enhance market participation. The result is that asset registration ahead of qualification has shortened the time FSPs must wait to register assets, potentially cutting the process by 1-2 months.

These upgrades not only improve efficiency but drive liquidity and competition so contributing to the broader goal of increasing flexibility across our network.



We are developing the flexibility markets required for the future.

The average carbon content of the flexibility we dispatch is **1.50g CO₂/kWh** compared to an average GB system carbon content of 125g CO₂/kWh





Flexibility market development

Digitisation underpinning our markets

Collaboration with Piclo



Our collaboration with **Piclo** is a perfect example of how we are driving innovation and market growth. By working together, we've created a streamlined process for FSPs to access our markets, enabling them to register assets, dispatch services, and settle trades more easily.



15 new organisations
joining via Piclo

"Our partnership with National Grid DSO has delivered Britain's first example of market platform interoperability. By creating an interface between Piclo's marketplace into National Grid DSO's Market Gateway platform, we have driven more liquidity, and successful trades, to their markets. And by offering Flexibility Service Providers a single place to access as many flex markets as possible, we are together making it easier for them to access new opportunities, increase revenue, and contribute to a smarter, more sustainable energy system. It is through collaborations like this that we can help deliver the Government's CP2030 vision of a five-fold increase in flexibility by 2030."

James Johnston, CEO

To date, this partnership has provided access to 302MW of flexibility to our market, driving liquidity and unlocking greater competition. By expanding market access, we're opening the door to more participants, more services, and more value for consumers. This partnership is laying the foundation for a future where flexibility is a core part of the energy system.

Flexible Power portal collaboration

We've continued to push boundaries through our Flexible Power Portal collaboration with SSEN and NPg, a game-changing dispatch platform for flexibility services. Working together, we have unified flexibility signals across DSOs and improved market compatibility for FSPs, and by quickly adopting and implementing Open Networks metering and settlement standards, we've simplified operational onboarding.

The Flexible Power Portal provides compatible API signals across all members in the collaboration, enabling quicker integration of FSPs across DSO regions, addressing accessibility in NGED's region as well as that of the other partners.

Industry leadership

This year we have led or co-led four of the nine Open Networks Technical Working Groups (TWGs) focused on Market Development.

Our leadership of the Commercial and Asset Pre-qualification TWG and co-leadership of the Flexibility Products & Stackability TWG both achieved improved, standardised and implementable outcomes that benefit FSPs by removing complexity that barriers to entry.

In particular, our leadership within the Commercial and Asset Pre-qualification TWG strongly advocated for and directly influenced changes that would make flexibility accessible for a broader range of providers, especially smaller and new entry providers that found some of the commercial pre-qualification criteria onerous and difficult to comply with.

This year we implemented the outcomes of both these TWGs, as well as implementing the Standard Contract TWG and Standard Settlement TWG outcomes.



Development of the Portal's capability is continuous and managed through our delivery partners, who triage a pipeline of system improvements based on flexibility participant feedback and priority of stakeholder needs.

As well as reducing flexibility operational integration costs and timescales, this initiative drives increased competition and capacity in the flexibility market, delivering long-term value for both DSOs and FSPs.

The increased system compatibility, operational efficiency and automated information flows are undeniably providing incremental savings across all flexibility instructions handled by the Portal. The results are clear: more capacity, more participants, and a smoother operational process.

We continue to co-lead ongoing activities within the Primacy TWG and the Dispatch Interoperability TWG. As these activities transition over to the Market Facilitator, our established experience in the development and implementation of dispatch protocols via the Flexibility Power Portal, first established by us in 2017 and our track record of collaboration with NESO, puts us well placed to continue to substantially contribute towards and guide these developments moving forward.

Since its announcement, we have engaged with the Market Facilitator across their programme of workshops and consultations, as well as bilaterally.

We strongly support the Market Facilitator in its objectives and priorities, and we will continue to maintain a proactive and engaged relationship with them and their ongoing programme.



Flexibility market development

3.1 Design of distribution flexibility products, contracts and processes

The case studies below provide the highlights of how we have worked with other organisations and Open Networks to evolve market design and improve in response to stakeholder feedback.

Case Study: Joint consultation with UKPN

In 2024, we worked with UK Power Networks (UKPN) on a joint consultation to improve alignment in flexibility market design. This engagement built on feedback from previous years and aimed to streamline processes, reduce barriers, and ensure greater coordination across the flexibility market.

As leaders in flexibility market development, we recognised the opportunity to align approaches with UKPN on several important issues. Our goal was to reduce the overhead for stakeholders by creating a more efficient, coordinated process. This alignment would simplify participation for flexibility service providers (FSPs) and streamline efforts across the sector.

The consultation focused on several key topics:

- Aligning procurement and dispatch timelines
- Developing Demand Turn-Up (DTU) and Generation Turn Down services
- Establishing a consistent approach to baselining
- Building trust in flexibility delivery
- Prioritising flexibility markets

We produced a joint report and hosted a webinar, sharing the results with all DSOs, Open Networks, and the Market Facilitator to ensure broader industry alignment.

We also worked closely with Open Networks ahead of time to ensure our discussions were productive and focused on driving meaningful improvements, rather than creating distractions.

A key finding from stakeholder feedback was around secondary trading, **stakeholders did not feel there was a clear need or benefit from introducing secondary markets at this time.**

Stakeholder feedback did strongly support Demand Turn-Up Services, and the introduction of Day Ahead trading. With benefits being more clear across the whole system, particularly for those FSPs who only have certainty about their level of participation closer to real time. Both of these initiatives will increase participation from a wider range of service providers, particularly renewables.

We have since implemented DTU markets in our last 24/25 round of trades and we have kicked off development of our Day Ahead offering, targeting 2025 launch. We will continue to consult with stakeholders about the need for a secondary trading process, implementing when it would deliver the best value.

We are excited to be participating in Demand Turn-Up with NGED. Making use of excess renewables locally is a win-win-win: for our customers, for the environment and for the grid. We look forward to NGED growing this market further and bringing Octopus Power-ups to even more customers.



Dr Michael Evans

Director of Optimisation and V2X, Octopus Energy Group

Through this alignment we've made it easier for stakeholders to engage with markets, paving the way for increased competition and cost savings. Together, these efforts are setting new standards and delivering more flexibility and capacity to the energy system, positioning us as true leaders in this space.

Case Study: Streamlining our Trading Processes

In January 2025, we introduced key changes to our flexibility Long-term trade definition and clearing processes, which include:

- **Long-term trades** framed in yearly blocks to drive better clarity and competition.
- **Clearer trade definitions** to eliminate confusion and streamline bidding.
- **Monthly trade clearing** rather than across the whole trade, to unlock the full potential of competition.

The improved clarity we've implemented with these changes, alongside the alignment of our Short-term trades to NESO market closure timeframes, enable better coordinated whole system market participation.

These updates are moving markets towards greater efficiency, enabling clearer participation, and ultimately lowering costs.

This is another step towards making our flexibility markets not just larger, but smarter and more coordinated.



Flexibility market development

3.2 Facilitation of market access

Making our flexibility services more accessible is a priority. The case studies below set out how we are improving participation for all stakeholders.

Case Study: Revenue stacking

Building on last year's [report](#) on revenue stacking, we have focused on making practical improvements, both internally and across the industry. We shared our findings with Open Networks, which has made progress on key recommendations, including improved website content, joint NESO and DSO product technical requirements, and revenue stacking assessment tools.

A significant milestone this year was the commitment from NESO and DSOs to support jumping and splitting of revenue streams. Additionally, we moved our Dynamic/Scheduled Availability-Operational Utilisation product to Day Ahead dispatch to improve alignment with the Balancing Mechanism (BM) and wholesale markets.

The improvements also included enhancements to our Market Gateway to support revenue stacking across different voltage levels, which has been in effect since Dec 2024. **We've seen multiple FSPs take advantage of this, offering services into both our LV and HV needs.** These efforts make it easier for flexibility service providers (FSPs) to stack revenues, reducing their opportunity costs and making participation in our markets more viable.

This year, we moved from commissioning a [report](#) to actively developing solutions, with ongoing work to ensure whole system coordination. The result has been greater clarity on what revenues can be stacked, helping increase market confidence and enabling FSPs to participate across multiple zones, including the BM and wholesale markets. The FSPs benefit from increased revenue opportunity, while we benefit from increased competition and greater participation in our markets.

Case Study: Accessibility of flexibility services

This year we worked with the Centre for Sustainable Energy (CSE) to assess the accessibility to flexibility. We commissioned a report, [access to flexibility](#) to evaluate and eliminate barriers to flexibility for these customers. Key recommendations from the report which was delivered in March include:

- **Improving access** to flexibility services for households in vulnerable circumstances. One example is to include non-heat pump electric heating as a specific flexible asset as this form of heating is more common in vulnerable households.
- **Increasing transparency** by publicly sharing how system benefits are calculated and distributed.
- **Promoting industry wide action** by advocating for a national campaign to increase public awareness of flexibility and its benefits and challenges.

These changes will expand participation and help FSPs unlock new revenue streams. The flexibility market is evolving into a space that works for everyone, ensuring no one is left behind in the transition to net zero.

CSE were really pleased to be commissioned by National Grid DSO to carry out this research. At CSE we champion social inclusion and fairness in the energy transition.



We wanted to do this research in partnership with National Grid to find out what the current situation is in terms of flexibility services participation, and what can be done to address any inequalities in the system. The recommendations from this work aim to make flexibility services a more accessible space for all and we are excited to keep working with National Grid DSO in this area.

Catherine Sage, Project Officer (Research), CSE

04

Options assessment and conflicts of interest mitigation





Options assessment and conflicts mitigation

4.1 Assessment of network options

Our Options Assessment Methodology

Our Distribution Future Energy Scenarios (DFES), updated annually, establishes a set of scenarios of future network use.

Combining DFES with the [Customer Behaviour Profiles](#) and the network model as published in our Long Term Development Statement allows us to simulate how customers will use our network in the future and identify what investments are needed, when.

For primary networks the Network Development Plan is the first stage in the options assessment.

Our [NDP methodology](#) sets out how different network options are assessed and solutions tested across a range of future pathways, in conjunction with other constraints. Once technically feasible options have been determined, the relative costs and benefits of these are assessed using the Common Evaluation Method and published in our Distribution Network Options Assessment.

Solutions are chosen based on maximum option value and flexibility for future network development, alongside long-term economic value.

Customer Behaviour Profiles and Assumptions

Our approach is set out in [this report](#).

Distribution Future Energy Scenarios

Makes a forecast of future energy demand.

Our [methodology](#) is published and updated every year.

The Long Term Development Statement

Provides a view of assets on our network and capacity in relation to current demand.

The methodology is available once registered on [this portal](#).

1. Network Development Plan

Communicates the constraints we've identified, and assesses multiple solutions in terms of technical suitability.

Our [methodology](#) is published on [our website](#).

2. Options assessment using Common Evaluation Method cost benefit analysis tool

Assesses the costs and benefits of the different solutions.

Our methodology is available on the [Energy Networks Association website](#).

3. Distribution Network Options Assessment

Communicates how we've decided to manage network constraints.

An overview of our approach is included in [the DNOA](#).

Inputs

Technical analysis

Economic analysis

Outputs

Options assessment



Options assessment and conflicts mitigation

4.1 Assessment of network options

Our Options Assessment Methodology

This year our NDP and DNOA have delivered a step change in both the detail we provide and the number of assets we consider in our analysis.

We have taken a holistic, transparent approach, showing our stakeholders how we've arrived at our recommendations for improving our network. With 136 bespoke reports covering all primary networks and our interfaces with Transmission, we've tailored our approach to meet the unique needs of each region.

In the West Midlands, we consider both the large industrial customer base in parts of the region and the rural population in others. Similarly in the East Midlands, we factor in the needs of the centralised growth corridor but also the rural areas where the electrification of agriculture and domestic heat will be important. This level of local insight means we're not just making decisions based on generic assumptions, but on deep, regional understanding.

Our NDP and DNOA aren't just documents. They directly drive our load related investment decisions based on a detailed strategic plan that ensures our investment is economic, efficient and coordinated with the needs of our stakeholders.

We lead the industry working group for developing the Common Evaluation Method, and we've embraced the CEM tool to undertake economic assessment of more constraints than ever before. This isn't just about meeting industry standards; it's about leading the way and doing this at scale. By considering everything from asset replacement programmes to new connections and flexibility options, we ensure that potential solutions are evaluated in the round, allowing us to land on the most strategic, cost-effective and future proof options.

We're committed to continuous improvement. We'll keep seeking stakeholder feedback, ensuring transparency in our decision-making, and maintaining the oversight of our Independent DSO Panel. This is how we continue to lead, innovating and driving results that benefit our stakeholders and contribute to a cleaner, more resilient energy system.

Case Study: Measuring success of secondary system planning

Secondary networks have a nominal voltage level of 11kV or below. Included within this category are low voltage networks, which make up the largest proportion of a typical distribution network and serve the vast majority of end users, both domestic and non-domestic. These networks need to grow to meet increasing demand. Traditionally secondary reinforcement work was planned and delivered by our local depots and it was not clear whether we were reinforcing the areas of the network that most needed it.

In ED2 we introduced a new Secondary System Planning team in the DSO which works with the local stakeholders to create a centrally co-ordinated plan for secondary reinforcement which is delivered locally by the DNO. This approach is designed to reflect the different funding mechanisms for secondary reinforcement in ED2 and to ensure that spending is directed at the assets where the need to upgrade is greatest.

Initial analysis of the DNO regulatory submissions reveals that, in the majority of cases, we've intervened in transformers operating at over 80% utilisation, a marked improvement over the figures from ED1. We are confident our approach adds the most value to consumers.

Our approach to secondary system planning sets us apart from other DSOs in terms of volume of capacity added and effectiveness of interventions. As a result our customers benefit from a more efficiently managed network that meets their needs. By focusing on the areas with the most significant issues, we ensure that capacity is available where it provides the most value.

Gross Capacity Added via Secondary Transformer Reinforcement

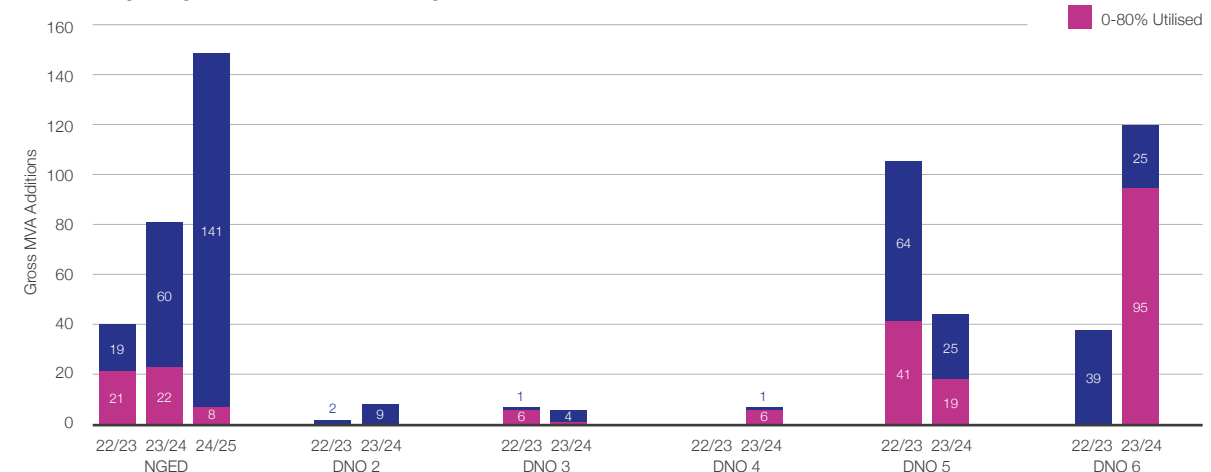


Figure 1 A Comparison of DNO secondary reinforcement (CV2) data submissions



Options assessment and conflicts mitigation

4.1 Assessment of network options

Whole System Co-ordination

This year we've worked closely on shaping some of the key activities across the whole energy system.

Regional Energy Strategic Plans:

The introduction of Regional Energy Strategic Plans (RESP) offers a great opportunity to drive whole system coordination. We have shared valuable insights into or existing load forecasting activities and identified areas for improvement which are shared with other electricity and gas networks. In July 2024, we hosted a stakeholder workshop in Birmingham ahead of the Ofgem-led workshops, further reinforcing our commitment to collaboration and knowledge-sharing across the sector. We've established regular touchpoints at senior levels and policy framework working groups to ensure that best practices are shared, and issues are addressed promptly.

Whole System Coordination Register:

In May 2024, we published a [Whole System Coordination Register](#) jointly with National Grid Electricity Transmission (NGET), ensuring a more integrated approach to network management. The Whole System Coordination Register describes the outcome of the activities NGED has undertaken to coordinate and cooperate with other electricity network licensees to develop whole electricity systems outcomes.

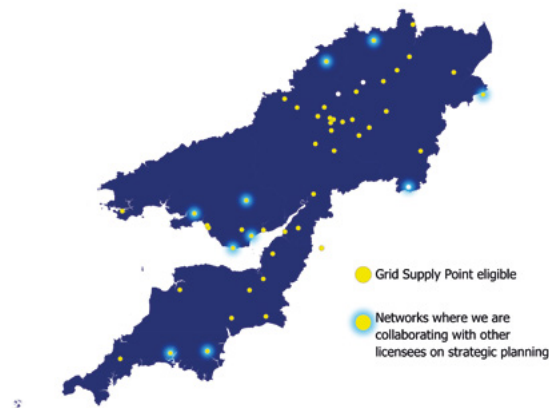
The publication benefits stakeholders by simplifying access to key information and reducing the effort needed to track coordination efforts. It covers engagements across the entire financial year (FY23/24), incorporating data from other DNOs, Transmission Operators (TOs), NESO, and other essential stakeholders.

Strategic planning across network boundaries:

Where our optioneering reveals implications for neighbouring networks or transmission, we proactively engage relevant licensees to assess options.

We have advanced our network planning by conducting strategic analysis across network boundaries, incorporating multiple licensees to a more integrated, cost-effective approach.

At Walpole, for example, we have worked with UKPN and NGET to analyse the future site strategy for a shared Grid Supply Point (GSP) across DNO licence areas. This required identifying future GSP locations, assessing network reconfiguration options, and conducting a cost-benefit analysis.



Case Study: Technical Limits

In 2024, we expanded our Technical Limits initiative to almost all GSPs as part of our ongoing commitment to enhancing network capacity management and accelerating renewable generation connections.

A major development this year was formalising Technical Limits into our commercial agreements with NESO. We have also developed a new Reallocation of Capacity methodology in conjunction with NESO which streamlines connections and provides autonomy for the DSO, particularly when customers withdraw from the transmission queue.

We hosted a series of webinars to engage with customers in the newly included regions, helping them understand the benefits of the updated process.

We have offered out 5.2 GW of accelerated offers. 2.9 GW of these have been accepted, accelerating connection timelines by an average of 5.8 years.

Collaboration with NESO, other DNOs, and industry bodies such as ENA has been vital in ensuring the consistency, improving transparency and streamlining coordination across the industry.

What distinguishes our approach is the speed with which we rolled it out. We have taken a more comprehensive approach than other DSOs, covering over 90% of our network and accelerating connections faster than many counterparts.

By improving capacity management and speeding up renewable generation connections, we are driving the low-carbon energy transition while delivering clear benefits to both consumers and developers.



Options assessment and conflicts mitigation

4.2 Management of Conflicts of Interest

Conflicts of Interest

Conflicts of Interest can be identified in three ways:

‘Top down’ by Management whereby we have proactively identified where a Conflict of Interest may arise, and control measures put in place.

Those which arise through the day-to-day operation of our processes. Where a potential conflict is encountered, it is raised with the relevant department head through our [Conflict Resolution process](#).

By stakeholders looking at our DSO/DNO relationship from the outside. We therefore outlined our processes for transparency within the updated [Guide to Governance](#).

We held a governance-specific workshop with our stakeholders in January 2024, and updated them on our [progress in October 2024](#). Over the last 12 months, we have acted on feedback by publishing our processes in greater detail through the Operational Decision Making Document, our [Guide to Governance](#) and [DSO-DNO Functional Separation Arrangement](#).

Regardless of how they arise, Conflicts of Interest are captured within our Conflicts of Interest register and we have published a comprehensive DSO-DNO Conflict Resolution process in our new [Functional Separation Policy](#).

Case Study:

Example of a Conflict of Interest resolved – South Devon

In our NDP, we identified a [constraint on the South Devon network](#). Both the DSO and DNO proposed solutions: the DNO preferred reinforcing cables for higher resilience, while the DSO suggested unmeshing the network to unlock capacity more quickly and efficiently.

We conducted a Cost Benefit Analysis considering cost, network reliability, operational complexity, timing, delivery, supply resilience, and future growth readiness.

This showed that the current resilience exceeded that of the rest of the high-performing network and so a reduction due to unmeshing was not an issue.

This solution was more cost-effective, reducing the impact on customer bills.

It maintained demand security and network integrity, despite a slight increase in lost load risk, and simplified network operations.

It also enabled the connection of new demand in line with our modelling data. The DSO solution was therefore chosen.

The insights gained were shared with our Independent DSO Panel and informed the updated [Conflict Resolution process](#), which was published in the Functional Separation Policy in March 2025.

This example highlights the value of NGED retaining the DSO under Functional Separation.

It allows decisions to be made efficiently, considering both DSO and DNO responsibilities to optimise whole-system solutions.





Options assessment and conflicts mitigation

4.2 Management of Conflicts of Interest

Functional Separation as a control measure

Our primary control measure for managing Conflicts of Interest is Functional Separation.

Since April 2024 we have consolidated our approach and made considerable advancements in the implementation and transparency of our control measures, including:

- Appointing our Independent DSO Panel, which has robustly challenged our approach to Governance across four in-person meetings, and targeted challenge sessions between meetings.
- Appointing a Managing Director of the DSO to strengthen the position of the DSO as a Functionally Separate part of NGED both internally and externally.
- Publishing our KPIs on a quarterly basis as of June 2024.
- Launching a Steering Group to drive Functional Separation across NGED.
- Publishing our full DSO Policy Suite, which will continue to be expanded with internal subprocesses throughout the coming year.
- Undertaking an internal 2nd line assurance of our Planning and Network Development Policy and underlying DSO-DNO processes.
- Publishing our first DSO-DNO Functional Separation Arrangement, which defines the DSO and DNO roles and commitments to one another.

Such was the scale of our progress in this time, we published an update to our [Guide to Governance](#) in March 2025.

We launched our new branding alongside our new website (dso.nationalgrid.co.uk) ahead of our Stakeholder event on 20 March 2025.

Why Functional Separation?

We evaluated a range of approaches to managing perceived or actual Conflicts of Interest, laid out in the table below.

	Functional Separation Lite	Functional Separation	Legal Separation Lite	Legal Separation	Legal Separation (NESO)
Key options	<ul style="list-style-type: none"> Functional Separation with executive level accountability Board level visibility Separate decision-making frameworks Independent oversight 	As Functional Separation Lite, plus: <ul style="list-style-type: none"> Independent Panel with published Terms of Reference and outputs Operational Agreement Separate Visual Brand 	As Functional Separation Lite, plus: <ul style="list-style-type: none"> Separate Legal entity 	As Legal Separation Lite, plus: <ul style="list-style-type: none"> Operate using a separate DSO licence Information Ringfencing 	As Legal Separation, with <ul style="list-style-type: none"> Financial Ringfencing Shared services ringfenced Separation of employee remuneration and entity
Risk and benefits	Increasing level of transparency relating to the roles of the DNO and DSO functions				
	Increasing perception of independence of decision-making between the two functions				
	Increasing perception of leadership relating to dispensing of the DSO function				
	Speed of decision-making across the DNO-DSO interface				
	Greater flexibility to adapt approach amid future regulatory changes				
	Longer time to implement				
	Higher cost to consumer to implement				

We do not regard Legal Separation to be operationally efficient or cost effective at present as the overhead of a separate price control for a DSO licence would be considerable and would make co-ordination between DSO and DNO more complex. We do not see benefit in Legal Separation Lite; we consider the creation of a separate legal entity as cosmetic unless it has a high-level Board that is completely independent of the DNO functions.

We selected Functional Separation as a pragmatic and cost-effective way of implementing DSO which achieved best outcomes for customers as it:

- enables efficient working through the sharing of relevant data, knowledge and services between DNO and DSO functions.
- keeps costs to consumers down through reduced duplication of resource and use of NGED supporting functions and office space.
- Allows for mitigation of perceived and realised conflicts of interest through robust processes and control measures.

This is underpinned by increased transparency with stakeholders in our decision making.

- keeps the DSO in an agile position to adapt to the wider regulatory environment, including CP2030 and ED3.



Options assessment and conflicts mitigation

4.2 Management of Conflicts of Interest

Functional Separation Steering Group

To accelerate our progress, we launched the monthly DSO-DNO Functional Separation Steering Group in December 2024.

The group is chaired by the Managing Director DSO and comprises of NGED executive members who provide executive-level oversight of, and push forward, the implementation of Functional Separation.

DSO-DNO Functional Separation Arrangement Document

On 12 March 2025, we published our **DSO-DNO Functional Separation Arrangement**. The was signed by the NGED President, Managing Director DSO, and NGED Director of Regulation to demonstrate to both internal and external stakeholders what the DSO and DNO roles are, and how each commit to Functional Separation of the DSO within the NGED licence.

DSO Policy Suite

We completed our DSO Policy Suite this year which covers the three core DSO roles together with the other DSO teams. The Managing Director DSO has editorial control of all DSO policies, and each policy is taken through a consultation process whereby the wider organisation, including the NGED Executive team, are invited to comment.

Each of our implemented policies are **published on the DSO website**, and are summarised at a high level within our updated Guide to Governance.

Assurance

We are implementing the National Grid “three lines” model for assurance across our DSO Policy Suite.

As part of this we conducted a second-line assurance review of the underlying processes and potential DSO-DNO conflicts across the **Planning and Network Development policy**.

Completed in February 2025, the month-long exercise robustly challenged us on the quality of our internal processes and areas where we may come into conflict with the DNO.

The resulting report identified minor areas for improvement which will shape the wider establishment and refinement of our processes across the whole DSO Policy Suite.

Independent DSO Panel

In April 2024, we formally launched our Independent DSO Panel which acts as both a non-executive, forward-looking ‘critical friend’ advisory Board, and an independent high-level scrutiny and assurance function for the DSO. We appointed a dedicated secretariat to support the Panel in fulfilling these roles.

Our Chair and Panel Members have extensive regulatory and industry experience across the sector to shape our DSO processes at an early stage to ensure we are pursuing the right model for customers and stakeholders. Over the last year, the Panel has met four times in-person plus held multiple online calls with the DSO.

To date, the Panel has:

- been closely involved in the development of our Governance processes to ensure we reach the right decisions quickly.
- championed increased transparency of our decision-making processes for greater assurance of stakeholders.
- challenged our approach to performance measurement and KPIs, including the regular publication of the latter.
- scrutinised our Strategic Workforce Planning to ensure National Grid DSO is more resilient and best prepared for the future.
- Exploration of the wider, life cycle Carbon Impact of Flexibility Services to provide our customers with more information. The Panel has pushed us forward on our internal approach to this.
- Supporting our response to the Regional Energy Strategic Plan through providing valuable challenge and input from an external perspective of our DSO.

The Chair of the Panel writes and presents an annual update to the NGED Board to provide independent assurance of our progress. Their report; the Panel's Terms of Reference; and summary minutes of meetings, are all published **on our website** for transparency.

05

Distributed energy resources (DER) dispatch decision making framework





Distributed energy resources (DER) dispatch decision making framework

Over the past year, we have focused on strengthening DSO/DNO operational coordination, accelerating connections with NESO, and improving communication across the entire system.

We've addressed conflicts between DSO and NESO DER dispatch, led on the Open Networks Dispatch Interoperability Technical Working Group and continued evolving our Operational Decision-Making (ODM) framework to ensure the scalable and transparent operation and dispatch of DER.

Alongside this, we've improved transparency by publishing dispatch data regularly and refining our modelling for more efficient, real-time system management.

How we obtain data for Distributed and Consumer Energy Resources (DER & CER):

- For generators over 500kVA and any generator under an Active Network Management (ANM) Scheme, we use the DNO Connection Control Panel via our SCADA systems. This is an 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 generator.
- For flexibility service providers (FSPs), data on all performance is gathered and provided to us in an automated and consistent way via the Flexible Power portal. This includes capacity, as well as maximum run times.

Optimising DSO/DNO and DSO/NESO Coordination

This year, DNO and DSO operations have worked closely to improve outage planning, policy alignment, and decision-making via the Control/DSO Operational Working Group.

This collaboration ensures that decisions are made in the best interest of the system and its users.

We've also worked with NESO to fast-track connections delayed by transmission constraints, helping deliver a lower carbon energy system more quickly.

Building on our existing ICCP links, and the establishment of new communication protocols has enabled better data sharing of our DER dispatch activities and planned DER outages, reducing conflicts and improving system coordination.

Unlocking Whole System Market Participation

As part of the Open Networks programme, we co-led the Technical Working Groups on Dispatch Interoperability and Primacy, both of which focus on market access:

- **Primacy:** It is important that flexible assets on the distribution system can access the widest range of markets and we are working closely together with NESO to avoid conflicts and to ensure efficient consumer outcomes. We have developed a process which takes asset data from NESO and compares it to our flexibility dispatch data. This highlights assets that are unavailable for NESO/DSO flexibility procurement due to a potential conflict. The report is automatically published to our Connected Data Portal, allowing NESO to access this data at their convenience.
- **Dispatch Interoperability:** We co-led the Open Networks Operational Dispatch API working group to establish a common approach to dispatch APIs across different platforms and markets, aiming to simplify processes for FSPs. Additionally, we have allocated capacity within the flexible power development team to implement system changes that support this common approach and ensure dispatch is delivered in a non proprietary manner.

The implementation and development of our ODM framework

To ensure efficiency and coordination, our decision-making is guided by a consistent overarching philosophy that spans technical, operational, and commercial considerations. By carefully balancing these, we ensure that all decisions align with our broader objectives and the needs of our customers.

Technical: the limits of our network equipment, to avoid overloading which can impact the health of the equipment.

Operational: the need to manage power flows on the network to ensure the security of supply to our customers.

Commercial: customer access rights, defined in their connection agreements, which caps the total amount of generation production we can limit.

Through the Flexible Power Portal, our DER dispatch infrastructure is flexible and scalable. And through our collaboration with other DSOs, our dispatch activities are aligned.

The Flexible Power portal operates independently of the core DNO business, enabling potential separation if necessary. The API functionality allows for large-scale DER dispatch actions, and our ODM framework supports consistent and automated dispatch instructions.

"The customer service from NGED is consistently helpful and responsive and we really appreciate their collaborative approach. NGED is leading the way in product development and through their use of Flexible Power, which is a fantastic platform with strong reporting, reliable invoicing, and smooth settlement processes functions available to us via API."

axle
energy

Pelle Jacobs, Axle Energy



DER dispatch decision making framework

Case Study: Stakeholder Consultation on our ODM

Following the publication of our [Operational Decision Making \(ODM\) framework](#) earlier this year, we engaged stakeholders to refine our operational practices. Their feedback was vital in shaping our [ODM Roadmap](#), ensuring we deliver developments that align with stakeholder priorities continue meeting their needs.

We've shared our ODM Framework with stakeholders, detailing capabilities, processes, and decision-making approaches. We outlined key objectives that must be met through effective ODM, presented the toolkit of enablers available for decision-making, and introduced proposals for further development. We actively sought stakeholder feedback, which is being used to inform our ongoing priorities. This process led to the publication of our ODM Roadmap, with a commitment to annual engagement to ensure continuous improvement.

These publications serve as a benchmark for the DSO sector and will help show that we are delivering against key objectives, such as scaling flexibility markets, enabling faster connections, maximising generation, and supporting net-zero goals.

The broader benefits extend across the entire system including transmission, DER, generation, connection customers, and bill payers. By focusing on these priorities, we are helping to ensure a more secure supply, accelerate connections, and integrate more clean generation into the network, contributing to a reduction in the UK's carbon intensity.

We are committed to continued annual engagement with stakeholders to refine the ODM Roadmap, positioning ourselves as a leader in transparency and a DSO that values stakeholder input, creating a transparent and accountable process for continuous improvement.

Reduction of Outage-Related Curtailment

We've focused on improving how we handle planned outages, especially during summer months when they disproportionately affect renewable generation, particularly solar power.

To address this, we've enhanced dynamic modelling to maximise generation uptime during outages.

Additionally, local netting of embedded generation has been integrated into our planning and design standards, reducing the need for higher network capacity.

This year, we expanded our outage planning program, applying improved modelling to maintain generation during outages. Where outages are unavoidable, we've shifted them to periods of lower production, minimising the impact on renewables.

As a result of our optimised outage management,

we have maintained 242GWh of generation

Our efforts benefit DER customers, who may now experience no outages or reduced outage durations.

All customers also benefit from lower carbon emissions and reduced wholesale market costs.

Our collaboration with the DNO control centre and outage planning teams ensures minimal disruption to renewable energy generation and maximising its contribution to the grid.



Increasing Transparency

We continue to publish data on the results of our long term and short term flexibility opportunities, and in addition we have introduced the publication of weekly DER dispatch decision data. With this flexibility providers can see how often we have instructed the utilisation of flexible DER in each of our flexibility locations, which assets were dispatched and the price we paid for the service.

Our work in enhancing market visibility and data provision through improved modelling assumptions and the integration of flexibility services is central to enabling flexibility at scale and closer alignment with real-time market needs. By automating many of these processes, we are better positioned to forecast demand and manage flexibility, driving greater efficiency in the system overall.



DER Visibility and Dispatch

Industry Leadership

As part of our commitment to the Open Networks programme, we have co-led the **Dispatch Interoperability Technical Working Groups (TWGs)**.

These groups focus on standardising dispatch infrastructure to reduce barriers for FSPs and increase market participation.

We have been central to developing an interoperable API standard, with OpenADR 3.0 as the foundation for the new GB standard.

This standard simplifies the dispatch process for FSPs, allowing them to provide services across multiple DSOs and NESO without needing re-registration or significant re-engineering. It also promotes the development of 'off-the-shelf' software solutions, reducing costs for market participants.

Our collaboration with stakeholders, including OFGEM, DESNZ, the OpenADR Alliance, FSPs, and Dispatch Platform Operators, and increasingly the Market Facilitator, ensures the long-term sustainability of the standard. We've also prioritised cybersecurity and future needs to maintain the infrastructure's longevity.

Our leadership in this area has not only pushed for technical solutions that benefit FSPs but also for ensuring the longevity of the infrastructure by incorporating cybersecurity and considering future needs. NGED has played a key role in promoting the development of a flexible, long-lasting standard that provides value to the industry as a whole.

Through this work, DSOs will benefit from a more competitive dispatch platform market, leading to cost efficiencies and enabling easier platform changes. By reducing technical barriers and vendor 'lock-in', we will also drive more competitive pricing for flexibility services, benefiting bill payers. This work is a continuation of our commitment to delivering a more transparent, accessible, and cost-efficient flexibility market.

Case Study: MW Dispatch

Our MW Dispatch initiative in collaboration with NESO supports management of transmission constraints in South West England. It allows NESO to expand its 'Connect and Manage' approach to assets which do not directly participate in the Balancing Mechanism.

Customers who opted into this arrangement gained accelerated access to the system ahead of Transmission reinforcement, and it has also provided them with access to new revenue streams.

By integrating this initiative with our existing ICCP communications link and SCADA system, we have been able to offer NESO greater dispatch flexibility, providing them with more tools in their operational toolkit, and allowing them to leverage our DERMS system to pass dispatch messages directly on to MW Dispatch DERs.

This system has already proven beneficial, helping to avoid transmission reinforcement costs, a key factor in reducing the overall cost of energy transmission. As a result, low-carbon generation has increased, and the overall system costs have decreased, driving significant savings across the board.

This year has seen more connections completed, with NESO now benefiting from the ability to dispatch energy more efficiently across our network. The shift towards MW dispatch allows us to better integrate renewable energy, reducing carbon emissions and maximising the value of existing infrastructure. This initiative not only accelerates the transition to a low-carbon future but also improves operational efficiency, bringing about tangible benefits for both customers and stakeholders.

Case Study: Short-Term Forecasting and Improved Decision-Making

We've adopted AI and machine learning to enhance our short-term forecasting, incorporating third-party weather data to improve load profile accuracy. We've implemented these models within our cloud-based DSO toolchain and plan to publish a short-term forecast dataset to increase market transparency.

Short-term forecasting enables better-informed flexibility utilisation decisions, reducing network risk and improving dispatch efficiency. By using granular, real-time load forecasts, we can better inform FSPs about expected procurement volumes for the short-term market, published three months in advance. The transition to shorter-term, weather-adjusted models brings us closer to real-time dispatch and supports day-ahead trading.

This shift has made our decision-making faster and more accurate, benefiting dispatch engineers and providing FSPs with clearer insights. Ultimately, these improvements lead to lower dispatch costs for customers and more efficient decision-making. The use of AI models has also saved engineering time, offering clear cost and efficiency benefits.

As a result, our forecasting accuracy has increased by 14% over the course of the year, this has enabled us to make better informed decisions about when we utilise flexibility services to manage the flow of power across our network.

Glossary

API	Application Programming Interface
BSP	Bulk Supply Point
CEM	Common Evaluation Method
CGMES	Common Grid Model Exchange Standard
CIM	Common Information Model
CP2030	Clean Power 2030 UK Government Action Plan
DESNZ	Department for Energy Security and Net Zero
DFES	Distribution Future Energy Scenarios
DNO	Distribution Network Operator
DNOA	Distribution Network Options Assessment
DSO	Distribution System Operator
DTU	Demand Turn-up
DUoS	Distribution Use of System charges
ED1/ED2	Electricity Distribution price control. Period 1 ran until 31 March 2023. Period 2 runs 1 April 2023 to 31 March 2028.
EHV	Extra High Voltage (between 11 kV and 132 kV)
ENA	Energy Networks Association
FSP	Flexibility Service Provider
GSP	Grid Supply Point
HV	High Voltage – 11 kV or less, above 1 kV.
ICCP	Inter-control Centre Protocol
LAEPs	Local Area Energy Plans
LV	Low Voltage – less than 1 kV
MVA	Mega Volt Amp
NDP	Network Development Plans
NESO	National Energy System Operator
NGED	National Grid Electricity Distribution
NGET	National Grid Electricity Transmission
Ofgem	Office of Gas and Electricity Markets
Primary network	NGED's 33kV, 66kV and 132kV network
RESP	Regional Energy Strategic Plan
SCADA	Supervisory Control and Data Acquisition
Secondary network	NGED's 6.6kV and 11kV networks

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