



Distribution Flexibility Services Procurement Statement 2023/24

March 2023

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EXECUTIVE SUMMARY

Northern Powergrid has a 'flexibility first' commitment. This means prioritising flexibility solutions where we can and only implementing network solutions where flexibility is not viable. By taking this flexibility first approach, we will mitigate the need for costly traditional network reinforcement and maximise our use of low carbon electricity.

As an indication of scale of the value of flexibility services, in [the DSO strategy section](#) of our ED2 business plan¹, we projected net benefits of up to £156 million could be delivered by avoiding traditional reinforcement costs over the course of 2023-28.

In 2023/24 we will tender again for flexibility services to defer reinforcement at primary substations, using the Sustain product and we will also seek to tender for the other products for the first time. We will issue invitations to tender in the autumn of 2023 and spring of 2024.

To provide better visibility and an enhanced experience for our stakeholders and tender participants, we will implement a market platform to engage with the market, to set out our flexibility needs and to procure flexibility. This market platform will enable us to introduce nearer to real time flexibility products in future, which will be essential to use flexibility services to help manage network outages and Access Significant Code Review (SCR) compliant curtailed connections. Alongside this, in collaboration with a number of other DNOs, we will continue to use the Flexible Power system for managing the scheduling, dispatch and monitoring of flexibility services.

To support the development of flexibility markets and to improve the procurement of flexibility services we will extend the scale and variety of our stakeholder engagement activities. This includes enhancing the Northern Powergrid website and the Flexible Power website, targeted engagement through the new market platform, and holding webinars and flexibility service provider surgeries for interested and other parties such as aggregators.

We would value your views on the information in this document and welcome feedback. You can contact us at flexibility@northernpowergrid.com.

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1. INTRODUCTION

1. Northern Powergrid is responsible for the electricity network that powers everyday life for 8 million customers across 3.9 million homes and businesses in the North East, Yorkshire and northern Lincolnshire. Our team of around 2,700 colleagues operates 24 hours a day, 365 days a year to maintain a safe, reliable and efficient electricity supply. From pandemics to pouring rain, heat waves to hailstones, we work around the clock for our customers – no matter what the circumstances. We are responsible for circa 100,000 kilometres of overhead power lines and underground cables, spanning c. 25,000 square kilometres and more than 63,000 substations.
2. The energy system is changing as we transition towards net zero, and electricity networks are at the heart of this change. For our region to meet the national commitment to net zero emissions by 2050, we need to enable whole energy system decarbonisation, including setting up the power system so that it can play a major part in decarbonising transport, heat and industry.
3. Our vision, developed collaboratively with our customers and stakeholders, is to deliver a smarter and more flexible energy system for our customers to decarbonise efficiently. To achieve this, we are expanding our capabilities and taking on the functions of distribution system operation (DSO) to actively manage the increasingly complex power flows on our network that result from decarbonisation, reduce the need for conventional reinforcement, and ensure that transition to net zero is efficient and affordable.
4. We have made significant progress over the ED1 price control period implement DSO functions with our DSO business unit launching in December 2022. Our next price control period, which runs from 2023 through to 2028 represents a critical period where we must unlock the value of data and network and customer flexibility in order to mitigate the need for costly traditional network reinforcement and maximise our use of low carbon electricity. Our [DSO Strategy](#) sets out the actions we will take in the five years from April 2023 to prepare and deploy this flexibility.
5. In this statement we provide more detail on our plans for the coming 2023-24 regulatory year in one key area of our DSO strategy: distribution flexibility services whereby we pay connected customers to vary their electricity use or production where this can help us to economically expand our network, reduce costs or help us manage customer demand uncertainty.

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6. The scope of this statement excludes other aspects of customer flexibility such as active network management (ANM), flexible connections (such as generation curtailment or curtailed connections) or price driven customer flexibility (for example customer load shift in response to time-of-use tariffs).
7. Alongside the stakeholder engagement described in section 4, energy efficiency continues to be another important focus area for our engagement and there is clear overlap in this space with our activity to engage with vulnerable customers. Our engagement on energy efficiency is well established; as far back as 2014 we commissioned [a study to assess the potential efficacy of energy efficiency as an alternative to network solutions](#) and our [Activating Community Engagement \(ACE\) project](#) explored how gamification could be a route to activating customer demand-side response (DSR). We also partner with 6 Citizens Advices across our region and Green Doctor, who will deliver fuel poverty support services to 20,000 customers over the next year. This includes advice on maximising the energy efficiency of customers' homes, as well as income maximisation and debt support to help with the affordability of their energy supply. Looking forward, are expanding the support we offer to vulnerable customers by setting up a decarbonisation programme offering advice on what measures and funding are available to our customers to reduce the carbon emissions from their home. This includes support in accessing ECO measures, solar PV and heat pumps.
8. In line with need, our first flexibility services contract became operational in 2022/23. As this need grows, we are developing our approach in order to ensure it delivers on our aims of achieving the most economical development and operation of our network. This statement seeks to communicate our ambition to create growth in flexibility markets in our region whilst demonstrating transparency of decision making - giving confidence to our stakeholders that our we are making the right investment decisions on behalf of our customers

2. FLEXIBILITY SERVICE REQUIREMENTS

Background

9. Ofgem Electricity Distribution Licence Condition 31E: Procurement and use of distribution flexibility services mandates us to procure Distribution Flexibility Services where it is economic and efficient to do so. We are committed to considering flexibility services when reviewing requirements for building significant new electricity network infrastructure in Flexibility Commitment Market Principles.²
10. In addition to using flexibility services to defer reinforcement, there are other use cases for flexibility services. The table below sets out the standard flexibility ‘products’ developed through the [Open Networks project](#), and how they can be used.

Service	Definition	Use Case
Sustain	A pre-agreed change in input or output over a defined time period to prevent a network going beyond its firm capacity	Traditional reinforcement: defer spending on building new network
Secure	A pre-agreed change in input or output based on network conditions close to real-time	Traditional reinforcement: defer spending on building new network To avoid over curtailment of customers with curtailed connections
Dynamic	A pre-agreed change in input or output following a network abnormality. In many cases this will coincide with long duration planned maintenance work OR in response to a forecast that we are at risk of over curtailing a customer on a curtailed connection.	Planned maintenance: manage the risk over power cuts during long duration construction periods. OR To avoid over curtailment of customers with curtailed connections
Restore	Following a loss of supply, an arrangement under which the flexibility provider either remains off supply, or to reconnect with lower demand, or to reconnect and supply generation to support increased and faster load restoration under depleted network conditions	Emergency support: provide support during unplanned power cuts

² ENA. [Our six steps for delivering flexibility services](#). June 2019.

Short-term and long-term flexibility needs

11. This year we will tender for pre-fault flexibility services to defer reinforcement at primary substations using Sustain and Secure. We will seek active power services in these demand-constrained locations so the flexibility could be provided through any of: generation turn up, demand turn down, or battery discharge. Flexibility can be provided by a single DER or by an aggregator of multiple DERs. A portfolio of providers could together deliver the full flexibility requirement, and so we are interested in receiving bids even if bidders are able to deliver only part of the required capacity for part of the time window at a location.
12. We will also develop our thinking on extending our use of flexibility services in future years and seek early opportunities to procure these services where appropriate. This will include: pre-fault services to defer reinforcement on HV circuits or at HV/LV substations; extending the range of products to include Dynamic and/or Restore; and extending the range of use cases to include outage risk management and managing curtailed connections.

Flexibility Services requirements for deferring network reinforcement

13. In response to the [Clean Energy for all Europeans Package](#), Ofgem introduced a standard licence condition (SLC25B) which requires the publication of a Network Development Plan (NDP). This new licence condition requires DNOs to inform stakeholders of our future network developments for a 1-to-10-year window so they can plan accordingly.
14. The NDP comprises a methodology document and datasheets and the thermal headroom reports for generation and for demand. These are all available on the [Network Data](#) page of our website.
15. The headroom reports indicate where it is anticipated that there will be available network capacity to accommodate future connections. The datasheets provide information on key projects set for delivery in terms of new infrastructure to be installed and flexibility services to be deployed and locations where we need these services in the coming years.
16. We also publish our [Long Term Development Statement](#) (LTDS) twice per year (major update in November, minor update in May). The LTDS provides forecasts on a 1-to-5-year horizon; the NDP covers the 5-to-10-year horizon and also provides demand and generation forecasts up to 2050.

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17. We use load index (LI) utilisation bands to assess peak demand versus capacity at our primary substations. Overall, the majority of our primary substations (612) remain in the lowest risk bands (L1/L2) with four in L3 and only seven in the highest risk L4/5 bands³ ⁴.
18. Although in the longer term we expect overall demand on our network to increase due to the electrification of heating and transport, there is a background of load decline behind our load growth driven reinforcement requirements to date. This decline is due to improved energy efficiency (especially LED lighting and appliance/white goods efficiency) and further decline in manufacturing industry in our regions. We have also managed demand growth by looking for load transfers and re-rating transformers before traditional reinforcement.
19. We will reforecast load and reassess network reinforcement needs to identify when and where constraints are expected and then determine our requirements for flexibility services for reinforcement deferral. Due to the background of load decline, the number of primary substations where we will seek flexibility services this year may not be significantly more than the 12 that we tendered for in 2022/23). However, we expect that as load increases in the longer term we will have a greater requirement for flexibility services for reinforcement deferral, some of which may be on HV circuits and at HV/LV substations as well as at primary substations.
20. We will tender in 2023/24 for flexibility services to defer reinforcement at primary substations where the constraint is expected within the next three years i.e., by 2025/26. For primary substation constraints expected from 2025/27 to 2028/29 we will seek expressions of interest from potential providers of flexibility services. To date we have tendered for the Sustain product. For the tender round in early 2024 we will procure Secure instead of or as well as Sustain for this use case.

Dispatch mechanism

21. We will dispatch flexibility services through the Flexible Power toolkit via an Application Programming Interface (API) communicating instructions between Northern Powergrid and

³ For a substation to be in band L4 or L5 peak demand must reach 99% of firm capacity at some point. Band L3 covers the range of 95-99% and L1 and L2 are 80% or below.

⁴ As of March 2023, based on 2021/22 load index

flexibility providers with 15-minutes notice. The Flexible Power system also includes a calendar for booking prearranged flexibility services, energy monitoring capability and a monthly billing system.

22. In the early stages of service provision under a new contract and as a confidence building measure, Northern Powergrid may contact the service provider directly to confirm that agreed generation or load shedding will be available to switch on or off at the prearranged time.
23. In cases where there is more than one flexibility provider available, the same dispatch principles and processes will be employed to dispatch the agreed flexibility by two or more flexibility providers. In the event of us needing to dispatch more than one flexibility provider in the same constraint management zone and time window, we may stagger the start and stop times for flexibility provision to minimise the risk of network instability.

3. TENDERING PROCESS

An objective, transparent and market-based tendering process

24. As we develop more DSO functions, we retain responsibility for the integrity of the regional electricity system, operate Flexibility services and support the provision of flexibility from our customers to other system actors (e.g., energy suppliers, ESO, third party commercial aggregators). This entails us being a trusted and neutral platform able to support optimisation of the whole energy system and underpin the rapid transition to carbon-free electricity, transport and heat, a system with the customer at its heart. We recognise the centrality of openness and transparency in our decision-making about flexibility procurement in building our position as a trusted, neutral operator.
25. As a regulated business, Northern Powergrid is bound by [the Utilities Contract Regulations \(2016\)](#) and the fundamental principles of transparency, proportionality, non-discrimination, fair and equal treatment to all, and mutual recognition of all regardless of value. We have Procurement Policies, processes and procedures to ensure that we comply with those obligations.
26. We will use competitive tenders to source flexibility services at the most competitive rates. We recognise that we are at an early stage in the development of markets for flexibility services in

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our region and it is our long-term ambition, as market development allows, to move towards alternative procurement processes, such as the reverse Dutch auctions approach, to secure the most competitive pricing. As with the tendering approach that we will be using this year, any such auctions would be concluded in accordance with the regulatory framework detailed in the Utility Contract Regulations.

Increasing ambition

27. This year we will implement a market platform for an enhanced bidder experience and to enable a move to nearer real time procurement, thus enabling the introduction of new products and new use cases. In 2022/23 we procured and utilised Sustain. In 2023/24 we will seek to introduce the Secure product too and we will proactively seek out other use cases where Flexibility Products can provide value.
28. We continue to advance our approach and methodologies through contributing to and adopting improvements in flexibility services developed through the Flexible Power consortium for dispatching and settling flexibility services, and also through the Open Networks project. In 2023/24 this will mean implementing the latest version of the common contract for flexibility services and a degree of standardisation in the pre-qualification process. It will also mean implementing any changes to facilitate the alignment between network companies of the technical specification of the four standard Flexibility Products.

Pricing strategy

29. Our pricing strategy seeks to balance the need to be as efficient as possible in our procurement with a recognition that, in the near future at least, flexibility markets in our region are likely to remain relatively illiquid.
30. Ideally, pricing for flexibility services would be set by a competitive process between the buyer of the flexibility service (Northern Powergrid) and providers. Our willingness-to-pay (WTP) for the flexibility service will be determined by the cost of the alternative actions (e.g. network reinforcement) available to us. Where applicable, any assessment of our WTP would need to take into consideration the option value associated with not making an irreversible network investment at a given point in time by procuring the flexibility service instead.

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31. The results of our previous expressions of interest and tenders for flexibility services have yielded limited participation in flexibility tenders, typically with one or two providers bidding in most locations. While participation in local flexibility tenders may improve in the future as these markets mature, it remains likely that in some locations there will continue to be a small number of flexibility providers available.
32. In the short term, while markets remain relatively illiquid, we expect to pay a price for flexibility services in the £300/MWh ballpark, with the actual figure influenced by the geographical location, market participation and cost of alternatives.
33. In our 2023-28 ED2 business plan⁵ we have assumed, for budgetary purposes, a flexibility procurement price of £300/MWh, comprising a £125/MWh availability fee (where the service is available for use on dates and times specified by the DNO) and a £175/MWh utilisation fee (for when the service is actually utilised by the DNO). These figures are included here solely to provide transparency on the likely market value for flexibility providers. Exact values used will be determined at the time of tenders being conducted taking into account the costs of alternative network solutions. We will use the Common Evaluation Methodology (CEM)⁶ to generate appropriate values for the flexibility in our market tenders.

Contract award arrangements

34. Flexibility procurement activities will be announced on the [‘where are we procuring’](#) page of the Flexible Power website, with onward links to the procurement platform.
35. We will operate two flexibility procurement cycles per year, with the timing consistent with other DNOs in response to market feedback which highlighted a desire from service providers for a common approach to flexibility procurement across all DNOs.

⁵ Page 49 of [‘scenarios and investment planning’ annex](#)

⁶ The CEM was developed through the industry Open Networks project and this important output is now the standardised and transparent means by which we establish an appropriate ceiling price for the flexibility services we need.

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36. Below is an indicative timetable. We will communicate any changes to this.

Stage	Autumn cycle	Spring cycle
Signpost tender requirement	31 Jul 2023	31 Jan 2024
Pre-qualification closes	15 Sep 2023	15 Mar 2024
Invitation to tender issued	25 Sep 2023	25 Mar 2024
Bidding window closes	6 Oct 2023	6 Apr 2024
Contract Award	3 Nov 2023	3 May 2024
Invite feedback from on the tendering process	Nov 2023	May 2024
Announce procurement outcomes	Dec 2023	June 2024

37. As far as possible we will align our procurement activity to these biannual windows but if an urgent and unforeseen flexibility need should arise outside these windows, we may publish an additional invitation to tender.

38. We will exercise a degree of adaptability in the contract arrangements. For example, since a portfolio of providers could together deliver the full flexibility requirement, we may contract with providers even if they are able to deliver only part of the required capacity for part of the time window.

4. STAKEHOLDER ENGAGEMENT

Planned stakeholder engagement

39. This year we will deliver an enhanced programme of stakeholder engagement activity with more online content and a wider range of engagement opportunities and channels.
40. We will carry out targeted engagement with potential Flexibility Service Providers and also participate more generally through our broader stakeholder engagement activities to reach energy suppliers; third party aggregators; current and potential customers with demand, generation or storage capability; and local authorities and community energy schemes. Our objective is to help to develop flexibility markets in our region; informing stakeholders about flexibility services and enabling them to participate in flexibility tenders by: -
- enhancing the flexibility information online on the Northern Powergrid website and the Flexible Power website
 - implementing a market platform for better visibility and more automated procurement of flexibility services, moving away from the dynamic procurement system that we have used to date
 - holding webinars and flexibility service provider surgeries
 - engaging directly with potential flexibility providers
 - newsletters and other regular email updates
 - participating in specialist conferences and events
 - engaging through Northern Powergrid's wider stakeholder events and channels

We will also seek structured feedback through surveys

41. The establishment of the DSO business unit in 2022/23 involved new activity in our engagement with local authorities and parties planning mass adoption of low carbon technologies (e.g. housing associations). This engagement that will continue and likely increase in 2023/24 offers opportunity to share details of areas where we are seeking flexibility and could open up more possibilities for energy efficiency measures to play a part in delivering flexibility. The Community DSO Network Innovation Competition project also starts in April 2023 and involves us engaging with community energy groups who may have the potential to offer services through either demand/generation flexibility or energy efficiency.

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42. We will announce all forthcoming flexibility procurement activities using the [‘Where are we procuring’](#) page of the Flexible Power website, setting out flexibility requirements and, when implemented, on the market platform. This will be accompanied by a wider information release through other channels including email, social media, and webinars.
43. From the outset of the procurement process, we will engage with potential service providers to clarify technical and commercial requirements and issues, and to support them through all stages of the process. This engagement will be primarily through bilateral engagement, supported by making key documents such as pre-qualification requirements, available online in addition to through the procurement portal for live tenders.
44. The stakeholder engagement around the procurement process includes announcing the outcomes of the procurement round and seeking feedback to help us to refine our pricing and procurement approaches with a view to securing more successful outcomes from future tenders, for example
 - if there are few bidders interested in providing those services at our estimated ceiling price, we will reach out to potential service providers in the region to understand any movement they may have in their cost drivers and whether there are any other constraints that are preventing them from being able to provide us with flexibility services.
 - on preferred products and optimal pricing structures for flexibility services
 - on their experience of the procurement process
45. Stakeholders can contact us at flexibility@northernpowergrid.com

Planned engagement with ESO, other DNOs and iDNOs

46. As well as engagement with potential service providers, we will also continue to engage with the ESO, other DNOs and iDNOs as well as key industry stakeholders via the ENA’s Open Networks project. This comprehensive programme of work will continue to be our primary channel for engagement on common rules for the procurement and use of flexibility services. Broader stakeholder input is welcomed and encouraged on the project, and we will update our stakeholders on opportunities to engage with the Open Networks project and on when we will implement changes that will affect them.

47. The [2023 Open Networks work programme](#) aims to allow flexibility providers to easily engage with the market while having transparency of network planning and decision making, and making energy networks more coordinated and aligned. We are committed to the programme which has a number of key commitments aimed at fulfilling the following objectives:
- Making it easier for flexibility service providers to participate in the flexibility market by standardising products, processes and contracts,
 - Improving operational coordination between networks and companies to remove barriers to the delivery of flexibility services,
 - Improving the transparency of processes, reporting and decision-making.
48. As one of a number of DNOs who are using the Flexible Power product to dispatch and settle flexibility services, we engage with those other DNOs to improve the product and how we operate flexibility services.
49. Further, forums such as the ESO's [Power Responsive](#) and the industry Flexibility First groups provide good opportunity to explore together how development of flexibility services by industry all parties may benefit customers by reducing whole system costs.

5. DETAILED QUANTITATIVE ASSESSMENT

How we determine the level of flexibility services to procure

50. Here we describe how we determine the flexibility services requirements for the purpose of resolving network constraints through deferring or avoiding traditional network reinforcement. We recognise that alternative methods would be required to establish flexibility needs for other use cases: to manage the risk of power cuts during long duration construction periods; or to provide support during unplanned power cuts, or to manage curtailment risk.
51. We start with detailed analysis of current and predicted future demand patterns. For recent years we calculate load index and distribution load estimates, based on known new load connections and load growth. For future years, we will use this information as input to our Distribution Future Energy Scenarios (DFES) process which forecasts load growth under a range of potential and

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credible energy futures for our region out to 2050. DFES is updated and published annually, taking into account stakeholder feedback.

52. We use the DFES load growth forecasts and distribution load estimates to identify constraints on the network: constraint peak demand, the number of constraint events that exceed the asset limits and when they occur (time of day hour, day of the week, weeks and months of the year). It is from these network studies and findings that we determine the need for flexibility services (i.e., location, volume and time windows) on a site by site basis, and confirm whether flexibility services can be deployed while still ensuring that voltage remains within statutory limits and that there would be no adverse impact on upstream distribution or transmission assets.
53. Projected half hourly demand growth above the firm capacity of a primary substation is used to fix the volume of demand reduction that would need to be secured by a flexibility service; peak requirement (MW); total energy requirement (MWh); and time of day, time of week and monthly requirements. These flexibility requirements form the basis for market engagement through signposting and the tendering process.

Quantitative assessment

54. When a substation group is identified as requiring intervention a detailed assessment of the existing site capability is undertaken in the form of a revised Firm Capacity assessment. The optioneering in this assessment considers a range of suitable solutions which will include traditional (asset based) solutions, smart (i.e., technological items, for example Real Time Thermal Rating) and flexibility services. The options are not deployed in isolation and optimal solution could consist of a combination of different approaches.
55. We will use the [Common Evaluation Methodology](#) (CEM) to provide consistency and transparency on how we choose the optimal solution, and demonstrate where flexibility services are the most economic and efficient solution to meet network needs.

How we will assess bids

56. Compliant bids will be assessed for total value using the evaluation criteria, which may differ by location and depend on the degree of liquidity in flexibility markets in each localised network area. The criteria will include the availability fee and the utilisation fee and may also consider the proportion of the total requirement at that location that the tenderer can deliver. For areas with market liquidity, we will rank contract awards in a waterfall manner from the most advantageous

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tender, down the rankings until all the required flexibility has been allocated to a provider or number of providers. As the development of flexibility markets in our region is still at an early stage, we anticipate that the total volume of flexibility bid at a target location is not likely to exceed our requirements. In this case, we would expect to award to the bidder(s) at the offered price providing that is compatible with our pricing strategy, and that the contracted flexibility will be dispatched at all the times set out in the contract.

Evaluation criteria

57. The evaluation criteria will be published within the invitation to tender documentation but are likely to include

- technical compliance i.e., whether the flexibility asset is of the right type, in the right place, meets the minimum flexibility capacity requirement
- whether the bid can form part of a cost-efficient mix of contracts to meet our flexibility requirements.
- In the event of a tiebreaker we will have a preference for less carbon intense technologies.
- Acceptance of the offered terms and conditions will also be taken into account.

Pricing strategies

58. The price that we are willing to pay for flexibility services is determined largely by taking into account the costs of alternative network solutions. Flexibility also gives us an option value for pursuing an alternative to traditional reinforcement depending on how the decarbonisation pathway evolves and where constraints appear on the network, and this is another factor that we may take into account in our pricing strategies.

Links to core documents and/or methodologies used to support decision making process for financial viability

59. The principles for forecasting, network impact assessment, optioneering and identifying solution are set out in both the [Network Development Plan](#) and in the [Scenarios & Investment Planning Annex \(4.1\)](#) of the ED2 business plan.

60. Information on DFES is available [here](#) and the latest DFES data [DFES 2022](#)