



**Distribution Flexibility Services Procurement Statement
2022/23**

March 2022

Version 1.0

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 reduce the need for conventional network reinforcement and endeavour to ensure that every kilowatt-hour of renewable energy is utilised.

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

In this statement we set out our plans to tender in 2022/23 for the major grid areas where we forecast we will have insufficient capacity to meet the needs of rising load growth. In total, our needs are up to 82MW of distribution flexibility services across 19 sites to defer or avoid network reinforcement, where it is economic and efficient to do so. We are agnostic as to whether the service is delivered from dispatchable generation, demand turn down or battery discharge. We plan to issue invitations to tender in July 2022 and February 2023.

We will continue to engage with flexibility providers and improve the development and procurement of flexibility services. As part of the Open Networks Project, we are committed to working with Energy Networks Association (ENA) members and flexibility stakeholders to standardise and align various processes in relation to the evaluation of flexibility as an alternative to network reinforcement, as well as the procurement, contracting and dispatch of flexibility services.

In addition, we have joined with other GB DNOs to develop the Flexible Power toolkit, which comprises a public facing website for sharing information about upcoming flexibility procurement as well as an online platform for managing the scheduling, dispatch and monitoring of flexibility services. Alongside our corporate website, the Flexible Power website is now our standard route to engaging with the market and setting out our flexibility needs – most recently the expression of interest process from February to March 2022 on our flexibility procurement intentions for 2022.

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

¹ Page 4 of https://ed2plan.northernpowergrid.com/sites/default/files/document-library/DSO_strategy.pdf

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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. As we look to the future, it is clear that energy networks will have a central role to play in achieving decarbonisation and enabling customer deployment of new technologies is key to our decarbonisation strategy. In the next decade, electric vehicles, heat pumps and battery storage systems will increasingly become the norm in households and businesses. Our role as a Distribution Network Operator (DNO) is changing to reflect this shift. As we develop and mature, Distribution System Operation (DSO) functions will enable a more active role in managing our network in real-time to balance demand and supply locally. Our vision is to optimise the energy system including maximising its ability to absorb and utilise green kilowatt-hours and ensure that customers can easily get the best value from their energy assets. In December 2021 we published our final business plan for ED2 that puts DSO in the context of our emerging plans for the next regulatory period 2023-28.
3. In this statement we provide more detail on our plans for the coming 2022-23 regulatory year in one key area of our DSO development plan: distribution flexibility services whereby DNOs pay their customers to vary electricity use or production as an alternative to infrastructure solutions for network reinforcement.
4. The scope of this paper excludes other aspects of customer flexibility such as Active Network Management (ANM), Flexible Connections (e.g. generation curtailment), or Price Driven Customer Flexibility (e.g. customer load shift in response to Time of Use Tariffs).
5. We are in the early stages of developing flexibility services markets while the use of ANM is well developed. Through the provision of information in this statement, we are seeking to create opportunity for the growth in flexibility markets, offer our connections customers more choices,

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and build increased transparency and trust with our stakeholders that we are making the right investment decisions on behalf of our customers.

6. In this statement you will find:

- detail on our flexibility services needs for the coming regulatory year;
- detail on our tendering process and pricing strategy for flexibility procurement;
- how we plan to engage with stakeholders to further develop markets and capability for flexibility services; and
- an explanation of the detailed quantitative assessments we have undertaken to evaluate our existing and forecast network loading and where necessary our flexibility requirements.

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 solutions² and our Activating Community Engagement (ACE) project³ explored how gamification could be a route to activating customer demand-side response (DSR). We have also undertaken a fuel poverty campaign with a reach of over 250,000 views and we have partnered with Energy Saving Trust to develop an app helping customers make smart decisions around their energy use. Looking forward, we plan to use our existing engagement as a base for future learning as well as to seek views from stakeholders about how energy efficiency may be used as a source of customer flexibility. For example, continuing our engagement with the Boston Spa Energy Efficiency Trial, which is trialling voltage management on the local network as a method of minimising long-term energy demand.

8. We continue to invest in ‘key enablers’ for decarbonisation. These are typically those actions which can allow us to implement low cost flexibility solutions for our customers, enhanced co-ordination for the operation of the distribution and transmission systems and provision of energy

² www.northernpowergrid.com/news/new-research-highlights-potential-for-energy-system-win-win-win

³ <https://www.npg-ace.com/>

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system data. Our DSO strategy⁴ (annex 4.2 of our business plan) sets out our plan for the next price control period. We propose to invest £92 million in our systems and people to undertake 28 deliverables and initiatives – tangible actions that are focused around how we gather, use and share data and how we prepare for and deploy flexibility.

9. We would value your views on the information we are releasing here. Please make contact in any way that suits, including through our flexibility mailbox flexibility@northernpowergrid.com.

2. FLEXIBILITY SERVICE REQUIREMENTS

Background

10. We believe that a key part of building DSO functionality is the active participation in developing a market for flexibility, giving all our customers the opportunity to take an active part in the energy system by using their energy resources to support the network when we need it. We plan to future proof our network through the utilisation of both generation and demand flexibility to help balance the system. This includes both commercial and domestic users being able to shift the way they may have normally used energy in order to avoid more expensive solutions being deployed.
11. 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. In 2018, Northern Powergrid joined the Great Britain Distribution Network Operators (DNOs) in announcing a commitment to flexibility co-ordinated by the Energy Networks Association (ENA). As part of this initiative we later committed to assessing flexibility service markets when reviewing requirements for building significant new electricity network infrastructure in Flexibility Commitment Market Principles.⁵

⁴ https://ed2plan.northernpowergrid.com/sites/default/files/document-library/DSO_strategy.pdf

⁵ ENA. Our six steps for delivering flexibility services. June 2019. Available at: <https://www.energynetworks.org/industry-hub/resource-library/open-networks-flexibility-commitment-2019.pdf>

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12. In response to the Clean Energy for all Europeans Package⁶, Ofgem has introduced a new 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 across our distribution network for a 1 to 10 year window.
13. The NDP report comprises of this Methodology Document and two associated reports: the Network Development Report (NDR) and the Network Headroom Report (NHR). These are all available on our website under the Network Data Section⁷.
14. The NDP provides valuable additional information on key projects set for delivery in terms of new infrastructure to be installed and flexible services to be deployed and locations where we need these services in the coming years. Its aim is to provide information to stakeholders on major developments for the years 1-10 so they can plan and forecast accordingly.
15. The main objective of the NHR (demand and generation) is to indicate where it is anticipated that there will be available network capacity to accommodate future connections and where flexibility services may be required in the longer-term.
16. We already have a licence condition to publish our Long Term Development Statement⁸ (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.
17. Our first NDP is due for formal publication on 1st May 2022, however a first draft of this was published on 14th March 2022⁹, which is to enable a 28 day consultation period ahead of this formal publication.
18. In assessing our intervention options, we take a 'flexibility first' approach, seeking opportunities to deploy customer flexibility to maximise the operating efficiency of our network for three key

⁶ https://ec.europa.eu/energy/topics/energy-strategy/clean-energy-all-europeans_en

⁷ <https://www.northernpowergrid.com/network-data>

⁸ <https://www.northernpowergrid.com/long-term-development-statement>

⁹ <https://www.northernpowergrid.com/asset/0/document/6680.pdf>

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use cases, and using the four standard flexibility services products developed through the Open Networks project.

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.	
Dynamic	A pre-agreed change in output following a network abnormality. In many cases this will coincide with long duration planned maintenance work.	Planned maintenance: manage the risk of power cuts during long duration construction periods.
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.

19. 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 three in L3 and only seven in the highest risk L4/5 bands^{10 11}.
20. Based on our planning scenario forecasts we expect intervention at 19 EHV sites over the next seven years to 2028. But we expect up to 71 EHV sites will require intervention during 2028-33. Hence we will be increasingly focusing on flexibility services to help manage the growing capacity requirement.

Our flexibility needs

21. *Table 1 Flexibility Needs* below sets out the 19 locations in 2022/23 where we are interested in exploring flexibility services as an alternative to network reinforcement, and the power requirements and time windows for flexibility services that we could call on as and when required within those windows. The content of our tenders proposed in this period will likely include all or some of the sites from this list. The exact content will depend on the outcomes of the expression

¹⁰ 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.

¹¹ As of 31st March 2021 (end of ED1 year 6).

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of interest and market engagement that has already commenced, combined with technical evaluation.

22. For example in Gainsborough the need is for flexibility just in the late afternoon on weekend days in the winter months of December to March. In contrast, at Knottingley it is needed all day, every day, all year round.

Table 1 Flexibility Needs

NB The last number of each postcode listed above is the first character of the second part of the postcode eg DN147 means all DN14 7xx postcodes and WF27 means all WF2 7xx postcodes

Location	Postal sector	Substation	Voltage (or below)	Max requirement (MW)	Typical requirement window		
					Months	Days	Hours
Beverley	DN147 DN185 HU106 HU107 HU130 HU143 HU151 HU152 HU164 HU303 HU16 HU165 HU170 HU177 HU178 HU179 HU52 HU54 HU55 HU60 HU67 HU68 HU69 HU70 HU76 HU80 HU170 HU175 HU177 HU178 HU179 YO244 YO253 YO259 YO42 YO43 YO625 YO86 YO87	Beverley 132/33kV	33kV	20.6	Jan - Mar, Oct - Dec	Mon - Fri	07:00 - 19:00
Bridlington	YO140 YO149 YO151 YO152 YO164 YO166 YO167	Martongate 66/11kV	11kV	3.3	Jan - Mar, Oct - Dec	All	15:30 - 20:00
Driffield	YO179 YO250 YO251 YO253 YO254 YO258 YO259 YO421	Kirkburn 66/11kV	11kV	1.9	Feb - Mar, Oct - Dec	Mon - Sat	06:00 - 18:30
Featherstone	WF27 WF41 WF61 WF64 WF75 WF76 WF77 WF84	Commonside Lane 33/11kV	11kV	7.6	Jan - Dec	All	05:30 - 23:00
Ferrybridge	LS255 WF102 WF103 WF110 WF118 WF119 WF81 WF82 YO89	Ferrybridge A 66/11kV	11kV	4.0	Jan, Nov - Dec	Mon - Sat	15:00 - 20:00
Gainsborough	DN209 DN213 DN214 DN215 LN12 LN13 LN82 LN83	Harpwell 33/11kV	11kV	0.8	Jan - Mar, Dec	Sat - Sun	15:30 - 17:00
Hull	HU128 HU129	Ellifoot Lane 33/11kV	11kV	0.3	Jan - Mar, Oct - Dec	All	10:00 - 21:30
Knottingley	DN69 WF110 WF118 WF119 WF83	Weeland Road 33/11kV	11kV	4.6	Jan - Dec	All	00:00 - 24:00
Leeds	LS165 LS167 LS168 LS42 LS53 LS61 LS62 LS63 LS64	Moor Road 33/11kV	11kV	2.7	Jan - Mar, Nov - Dec	Mon - Thurs	17:00 - 20:00

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Location	Postal sector	Substation	Voltage (or below)	Max requirement (MW)	Typical requirement window		
					Months	Days	Hours
	LS101 LS102 LS260 LS268 LS90	Stourton 132/11kV	11kV	2.0	Jul - Aug, Nov	Mon - Fri	00:00 - 02:30 06:30 - 24:00
Market Weighton	DN147 HU152 YO421 YO424 YO433 YO434 YO625 YO86 YO87	Holme Upon Spalding Moor 33/11kV	11kV	0.7	Jan - Feb, Nov - Dec	Mon - Fri	03:00 - 18:00
	HU152 HU177 YO259 YO424 YO43 YO433 YO434	Southgate 33/11kV	11kV	0.9	Feb, Sep, Nov - Dec	All	16:00 - 19:00
Pocklington	YO259 YO415 YO42 YO421 YO422 YO424 YO433 YO434 YO45 YO86	Hayton 66/11kV	11kV	2.6	Jan - Mar, Nov - Dec	All	06:30 - 19:30
Ripon	DL79 DL82 HG33 HG41 HG42 HG43 HG44 HG45 YO73 YO74	Ripon 33/11kV	11kV	6.1	Jan - May, Oct - Dec	All	06:30 - 20:00
Scunthorpe	DN171 DN173 DN174 DN85 DN91	Crowle 66/11kV	11kV	3.3	Jan - Jun, Aug - Dec	All	00:00 - 24:00
Sheffield	S305 S350 S357 S361 S362 S363 S364 S369 S66	Wheatacre Road 66/11kV	11kV	2.4	Jan - Jun, Sep - Dec	All	07:30 - 20:30
Stockton on Tees	DL13 DL21 TS160 TS181 TS182 TS183 TS184 TS185 TS190 TS197 TS198 TS199 TS201 TS202 TS211 TS213 TS225	Norton 132/11kV	11kV	9.8	Jan - Apr, Oct - Dec	All	15:00 - 20:30
Washington	DH47 NE372 NE373 NE387 NE388 NE389 SR49 SR53	High Barmston 66/11kV	11kV	1.3	Jan - Mar, Nov - Dec	Mon - Fri	07:30 - 17:00
Whitley Bay	NE250 NE258 NE259 NE261 NE262 NE263 NE264 NE270 NE298	Monkseaton	11kV	7.2	Jan - Mar, Oct - Dec	All	07:30 - 20:30

23. It is possible that there may be other parts of our network where additional flexibility needs will emerge in that are not evident at the time of this statement (for example, in the case of a significant increase in a major industrial electricity user’s demand). In that case, we may seek to procure flexibility services to meet those additional needs too.

24. We will continue to be open and transparent in the way that we communicate our needs and our evaluation of whether we consider the appropriate capacity intervention to be a non-network or network solution. For example, we consulted the market on a network options assessment in 2021 for two areas of the grid where our final decision was to use a low cost network flexibility

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solution instead of customer flexibility. The price we could offer to the market for customer flexibility was agreed as being too low to warrant a market tender exercise.¹²

Dispatch mechanism

25. We will dispatch flexibility services through the Flexible Power toolkit via an Application Programming Interface (API) communicating instructions between Northern Powergrid and flexibility providers. The Flexible Power system also includes a calendar for booking prearranged flexibility services, energy monitoring capability and a monthly billing system. We are planning to use the Flexible Power toolkit for flexibility services procured from summer 2022.

26. The dispatch mechanism coordination between Northern Powergrid and the service provider has three key features:

- Flexibility Start Switch On

The Flexible Power API gives the contracted service provider a 15-minute notice to activate the flexibility service. The service provider switches the generation on or switches off the load at the agreed time.

- Flexibility Stop Switch Off

The Flexible Power API gives the contracted service provider a 15-minute notice to deactivate the flexibility service. The service provider switches the generation off or can switch the load back on.

- Emergency Stop

This feature is used by either party to give notice of an emergency stop in the flexibility service e.g. by the service provider in the event of a fault on the generation equipment or an inability to reduce load demand, or by Northern Powergrid in the event of a network fault. The emergency stop is communicated by a phone call.

¹² See August 2021 network options decision document here

<https://www.northernpowergrid.com/asset/0/document/6263.pdf>

27. In the early stages of service provision under a new contract and as a confidence building measure, Northern Powergrid will telephone the service provider to confirm that agreed generation or load shedding will be available to switch on or off at the prearranged time.
28. 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 would stagger the start and stop times for flexibility provision in, typically, 15-minute intervals to minimise the risk of network instability.

3. TENDERING PROCESS

An objective, transparent and market-based tendering process

29. 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.
30. As a regulated business, Northern Powergrid is bound by the Utilities Contract Regulations (2016)¹³ 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.
31. 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

¹³ https://www.legislation.gov.uk/uksi/2016/274/pdfs/uksi_20160274_en.pdf

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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

32. This statement sets out our ambition to tender for up to 82MW of flexibility at 19 locations, a significant step forward compared to our previous statement a year ago that set out our general approach and methodologies without setting out any specific quantified targets. 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, such as the four standard products, standard contract terms, a summer and winter tender rounds.
33. We do not expect that flexibility will be viable in all 19 locations. Neither do we expect that we will be able to secure contracts for all the flexibility that we need. However, our 'flexibility first' commitment is to seek it whenever it is viable and also to be transparent in our reporting to build confidence in the market.

Pricing strategy

34. 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.
35. Ideally, pricing for flexibility services would be set by a competitive process between the buyer of the flexibility service (Northern Powergrid) and providers. In most cases, we are likely to be the only potential buyer and 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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36. In our 2023-28 business plan¹⁴ 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.
37. Looking at the results of our previous expressions of interest and tender for flexibility procurement and wider market intelligence, we observe evidence of limited participation in flexibility tenders held by DNOs to date, typically with one or two providers on average 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.
38. In the short term, while markets remain relatively illiquid, we therefore 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.
39. In the future we will continue to engage formally and informally with flexibility providers and other stakeholders to seek views and feedback about what pricing level/structures could look like for flexibility products. An optimal payment structure would need to balance the trade-off between the need for least cost procurement with our desire to work towards stimulating deep and liquid markets for flexibility services in our region. In particular, the relative value of the availability fee and utilisation fee will need to reflect the risks to the DNO and to the flexibility services provider. We will also continue to closely monitor the results of other flexibility tenders run by DNOs with a view to using this market intelligence to evolve our own pricing strategy.

¹⁴ Page 49 of https://ed2plan.northernpowergrid.com/sites/default/files/document-library/Scenarios_and_investment_planning.pdf

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Contract award arrangements

40. Flexibility procurement activities will be announced on the ‘where are we procuring’ page of the Flexible Power website¹⁵, with onward links to enable providers to access to the online procurement process.
41. We expect to 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. The content and scope of the Winter cycle will be significantly influenced by the results of the Summer cycle.

Stage	Summer cycle	Winter cycle
Issue contract notice: a Dynamic Purchasing System (DPS) is available for potential service providers to register interest and complete technical pre-qualification questionnaire (PQQ)	April 2022	November 2022
Signpost tender requirement	30 June 2022	30 Jan 2023
ITT Opens	18 July 2022	21 Feb 2023
Technical PQQ closes	15 Aug 2022	20 March 2023
ITT Closes	22 Aug 2022	30 Mar 2023
Contract Award	30 Sept 2022	30 Apr 2023
Invite feedback from potential service providers on the tendering process	October 2022	May 2023
Announce procurement outcomes	31 Oct 2022	31 May 2023

¹⁵ <https://www.flexiblepower.co.uk/locations/northern-powergrid/where-we-are-procuring>

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42. 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.
43. We will exercise a degree of flexibility 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

44. We will announce all forthcoming flexibility procurement activities using the 'Where are we procuring' page¹⁶ of the Flexible Power website, setting out the locations and dates and times that flexibility services are required. This will be accompanied by a wider information release.
45. 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, contract terms & conditions available through the Flexible Power website in addition to through the online procurement portal for live tenders. The stakeholder engagement around the procurement process includes announcing the outcomes of the procurement round.
46. At least initially, we anticipate there may be situations where we tender for flexibility services but have few bidders interested in providing those services at our estimated ceiling price. If this happens, 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 any other constraints that are preventing them from being able to provide us with flexibility services.

¹⁶ <https://www.flexiblepower.co.uk/locations/northern-powergrid/where-we-are-procuring>

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47. We will also continue to engage with service providers and other stakeholders to seek feedback on optimal pricing structures for flexibility services, supported by close monitoring of the results of other flexibility tenders run by other DNOs with a view to using this market intelligence to evolve our own pricing strategy. Our intention is to use these learning opportunities to refine our pricing and procurement approaches with a view to securing more successful outcomes from future tenders.
48. Outside the procurement cycles, we have engaged on the topic of flexibility through flexibility specific engagement and also 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. We will continue to engage with stakeholders with the objective of helping to develop flexibility markets in our region. This will include consideration and potential trials on how we may make more use of flexibility at the domestic and small business level – both to participate in provision of services to assist with EHV network constraints as well as needs on the LV network.
49. In addition, we recognise that we need to work with stakeholders to understand future trends for energy efficiency in our region, and how we may accurately assess energy efficiency measures as an alternative option to network reinforcement, ANM Flexible Connections or flexibility services. Currently, data from network monitoring is more comprehensive on the EHV system enabling a more accurate view of energy efficiency at the primary substation level. It is likely to be much harder to efficiently assess both implementation cost and the likelihood of energy efficiency schemes reliably resulting in reduced consumption during the specific time windows when network load needs to be managed.
50. Potential service providers are encouraged to contact us at any time via flexibility@northernpowergrid.com

Planned engagement with ESO, other DNOs and iDNOs

51. As well as engagement with potential service providers, we will also continue to engage with the ESO, other DNOs and iDNOs 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 t project.

52. The project includes further development of the Common Evaluation Methodology (see section 5) and accompanying cost-benefit assessment tool to address feedback from stakeholders that it does not go far enough in the areas of carbon assessment, optionality valuation, or evaluating ANM solutions or energy efficiency as additional options available to DNOs. We will contribute to these developments and adopt the updated CEM and tool for our Distribution Network Options analysis and facilitate deployment of alternative solutions such as flexibility services, flexible connections, or energy efficiency solutions, where these are assessed as being more economic and efficient than investing in network reinforcement.
53. 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.
54. Beyond Open Networks, our whole system engagement with the ESO includes routine bilateral and multilateral interaction with other DNOs. This will continue to explore how developments and investment by the ESO and the DNOs may provide whole system benefits for customers – for example operating services with distribution connected parties that minimise transmission costs or enable quicker connections.
55. 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

56. Here we describe how we have determined the flexibility services requirements set out in section 2, which are 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.
57. 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

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and load growth. For future years, we will use this information as input to our Distribution Future Energy Scenarios (DFES)¹⁷ process which forecasts load growth under a range of potential and credible energy futures for our region out to 2050. DFES is updated and published annually, taking into account stakeholder feedback.

58. The DFES load growth forecasts are used to calculate load indices and distribution load estimates which we use 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 scheme by scheme basis, and confirm whether generation turn-up flexibility services can be procured while still ensuring that voltage remains within statutory limits and that there would be no adverse impact on upstream distribution or transmission assets.
59. 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

60. 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.

¹⁷ <https://www.northernpowergrid.com/asset/0/document/6617.pdf>

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61. We will use the Common Evaluation Methodology (CEM)¹⁸ 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

62. 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 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

63. The evaluation criteria will be published within the ITT documentation. Our post tender stakeholder engagement will explore how well the criteria are well understood by stakeholders.

Pricing strategies

64. The price that we are willing to pay for flexibility services is determined largely by the network options assessment process (an example of which is referred to in para 24). Flexibility also gives us 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.

¹⁸

[https://www.energynetworks.org/assets/images/Resource%20library/ON21-WS1A-P1%20Common%20Evaluation%20Methodology%20\(CEM\)%20v2.0%20%20\(14%20Jan%202022\).pdf](https://www.energynetworks.org/assets/images/Resource%20library/ON21-WS1A-P1%20Common%20Evaluation%20Methodology%20(CEM)%20v2.0%20%20(14%20Jan%202022).pdf)

Other ways of comparing flexibility services bids to traditional solutions

65. Development of thinking in this area is also likely to be influenced by further enhancements to the common evaluation methodology taking place collaboratively through the ENA Open Networks project. In workstream 1a we are developing proposals to incorporate option value¹⁹ into the methodology, and also exploring options for forecasting and actual carbon reporting of flexibility markets and how this learning could be incorporated into the methodology²⁰.

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

DFES 2021 <https://www.northernpowergrid.com/asset/0/document/6617.pdf>

The principles for forecasting, network impact assessment, optioneering and identifying solution are set out in both

the Network Development Plan NDP <https://www.northernpowergrid.com/network-data>

and

the Scenarios & Investment Planning Annex (4.1) of the ED2 business plan

https://ed2plan.northernpowergrid.com/sites/default/files/document-library/Scenarios_and_investment_planning.pdf .

¹⁹ Workstream 1a, Product 7, p15 of

[https://www.energynetworks.org/assets/images/Resource%20library/ON22-PRJ%202022%20Programme%20Initiation%20Document%20\(PID\)%20\(13%20Jan%202022\)%20Published.pdf](https://www.energynetworks.org/assets/images/Resource%20library/ON22-PRJ%202022%20Programme%20Initiation%20Document%20(PID)%20(13%20Jan%202022)%20Published.pdf)

²⁰ Workstream 1a Product 7, p26 of the same document