Distribution Flexibility Services Procurement Report 2021/22

April 2022

CONTENTS

EXECUTIVE SUMMARY

In this report we provide information on our activity in 2021/22 in relation to distribution flexibility services whereby electricity distribution network operators (DNOs) pay their customers to vary electricity use or production as an alternative to infrastructure solutions for network reinforcement. We have a 'flexibility first' commitment, which means prioritising flexibility solutions where we can and only implementing network solutions where flexibility is not viable. This flexibility first approach will reduce the need for conventional network reinforcement and help to ensure that every kilowatt-hour of renewable energy is utilised. This is a significant element of our development of distribution system operation (DSO) functions.

This report describes our programme of stakeholder engagement with flexibility services market participants, which, largely centred on bilateral meetings to build relationships with service providers, is at the heart of our ongoing effort to support the development of distribution flexibility markets and capabilities in our region.

As the majority of our substations are in the lowest risk bands, the need for flexibility to avoid or defer investment has been low to date. In this report we provide information on the specific two cases in the year where flexibility services were considered as an alternative to network solutions. Economic analysis indicated and stakeholder feedback confirmed that the network solutions were more appropriate as they were significantly more economic than flexibility. As a result we did not need to procure any flexibility services in 2021/22 and our activity on customer flexibility involved only flexible connections[1].

Our activity in the 2021/22 period was in line with the forward-looking statement that we published in 2021.

[1] We have generation connected to our network where customers have accepted that the risk of their output being curtailed in order for them to receive a cheaper and/or quicker connection. This is a different form of customer flexibility where we have 433MW of generation that may be turned down today and we forecast this to grow alongside the use of DNO-contracted flexibility services that are the focus of this report.

We anticipate our customer flexibility needs for the next 2022/23 period will be a step up and have set this out in our looking-forward Distribution Flexibility Services Statement 2022/23.

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 you will find information for the 2021/22 year:

    - our procurement and use of flexibility services;
    - stakeholder engagement during the year;
    - economic viability and market assessments; and
    - carbon reporting.

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

2. FLEXIBILITY PROCUREMENT AND USE SUMMARY

5. In our Flexibility Services Procurement Statement for 2021/22, we described how we assessed the need for flexibility services for the purposes of deferring network reinforcement, and how the low risk profile meant that we expected to seek flexibility services at just two of our primary substations for the purposes of security of supply: Stow near Lincoln (LN1 2AJ) and Burton Pidsea near Hull (HU12 9EY).

6. Within the year, our analysis indicated that flexibility would be uneconomic at these two locations and as a result, after open consultation with our stakeholders, we did not tender for or contract for any flexibility services during the year. There is more information about the stakeholder engagement and economic viability in relation to these two locations later on in this report.

7. In our Flexibility Services Procurement Statement we set out our intention to signpost our tender requirements twice per year in June and January. Due to the economics at these locations, we decided not to issue a formal tender and instead used an 'expressions of interest' process twice during the year to keep potential service providers appraised of the decision to not tender in the year and of our medium term flexibility needs in November 2021 and February 2022. We received positive feedback from stakeholders that we engaged directly about the decision not to tender when the value on offer was insufficient to interest the market.

3. STAKEHOLDER ENGAGEMENT

8. Throughout 2021/22 we have engaged with stakeholders, both with flexibility services market participants, and with industry more broadly, including through Open Networks. Our approach is largely centred on bilateral meetings with stakeholders, supplemented by speaking engagements and discussion at relevant conferences and industry forums.

9. In addition, we have joined with other DNOs to develop the Flexible Power toolkit[2], which comprises a public facing website for sharing information about upcoming flexibility procurement

[2] Flexible Power is a joint initiative from five UK DNOs: Western Power Distribution, Northern Powergrid, Scottish and Southern Electricity Networks, SP Energy Networks, and Electricity North West.

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 for 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.

10. Our engagements with flexibility services market participants have yielded a number of important insights that are of relevance to the development of flexibility procurement reporting. In most cases these insights were offered in the context of more general discussion about how we can best provide visibility to market of DNO flexibility opportunities and be open and transparent in our decision making. These insights have clear relevance to the development of procurement reporting and because we see the development of robust and informative procurement reporting as a key component of developing open and transparent sources of information for our flexibility markets.

11. Our programme of stakeholder engagement has created important relationships with market participants. It has also yielded valuable insights which continue to inform the development of our approach to flexibility services for the remainder of ED1 and the development of our ED2 business plan and DSO Strategy. Ongoing, proactive stakeholder engagement will remain at the heart of our ongoing effort to support the development of distribution flexibility markets and capabilities in our region.

Engagement on flexibility services sought

12. We advertised the flexibility services sought via several routes: the 'where are we procuring?' page on the Flexible Power webpage, a series of news pieces in November 2021 and February 2022, and via direct emails in February 2022 calling for expressions of interest from potential flexibility services providers, reaching 52 different organisations. We engaged directly with 24 different stakeholders on our flexibility requirements, including 10 organisations providing distributed energy resource (DER) aggregation and optimisation (spanning domestic scale up to grid scale battery storage), three energy market technology providers, two EV charging providers, and five generation operators. They key issues from these engagements are set out in the 'Summary of Engagement' section starting on page 10.

13. In addition, we continue to maintain an open and transparent dialogue with markets in our region about our flexibility first approach and the decisions we have made about managing our network. We published a Network Options Analysis explaining our decision making process and rationale for proposing to pursue a network flexibility solution (voltage regulation) instead of contracting flexibility services at the two major substations of the aforementioned Stow and Burton Pidsea. We were particularly mindful of the consistent interest market participants have shown in increasing their understanding of the commercial opportunities available in DNO flexibility markets. Given the rationale for our preliminary decision was related to the low cost of an alternative network flexibility solution and the resultant limited budget for flexibility procurement, we wanted to have the opportunity to explain this reasoning to the market. We saw this as an important opportunity to provide insight into our optioneering process as well as how the budgets and pricing for flexibility procurement are influenced by the cost of alternative network options.

14. We also supplemented our invitation for market feedback with proactive direct engagement with stakeholders to seek their views on our decision and rationale. We only confirmed our final decision about network options following the conclusion of the four-week consultation period outlined in our preliminary decision. In our proactive engagements we received positive feedback from our stakeholders on this approach, in particular relating to our openness about the rationale behind our options assessment and our willingness to share this, rather than simply reporting a final decision.

15. This engagement process entailed

- Spring 2021: Our network analysis and optioneering process
- Mid June: We proactively met bilaterally with flexibility market participants to validate our thinking and gather perspectives
- End June: We published our preliminary decision not to start flexibility services procurement at Stow or Burton Pidsea. This was emailed directly to stakeholders and was available on our website for four weeks to allow stakeholders time to feedback (which closed on 25 July 2021).
- August: As we had not received any challenge during the fourweek window for feedback and our proposals met with support during our bilateral engagements, we made a final decision not to start with procurement at these sites and we published the final network options assessment confirming this.

Engagement on common rules for the procurement and use of flexibility services

16. We have participated in Open Networks activity to develop and enhance common rules for the procurement and use of flexibility services. The table below sets out the topics addressed in the year and a status update on our adoption of the rules.

Topic	Adoption status
Enhancements to the Common Evaluation Methodology (CEM) and tool used to evaluate flexibility and traditional intervention options	We are using the 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.
Alignment of Flexibility services procurement processes across DNOs and ESO	We are following this standardisation agenda. Specifically, our January and June dates for commencing tenders were chosen to align with the majority of others through discussions at Open Networks.
Commercial arrangements – development and improvement of the standard agreement for procuring Flexibility services across DSO and ESO.	We will use the standard agreement for contracting for flexibility services from 2022 onwards.
Common baselining methodologies for all DNOs.	A methodology and supporting tool for use by DNOs and by flexibility services providers were delivered in 2021 for implementation in 2022.
Dispatch interoperability & Settlement: Review of interoperability of systems across DSO and ESO. Review approach to settlement across DSO services.	To look at standardisation of dispatch and settlement processes, for implementation in future years.

Topic	Adoption status
Carbon Reporting to support the Ofgem/BEIS initiative to achieve common methodologies for carbon reporting and monitoring across DNOs.	A new topic in 2022 that will influence how we evaluate and report on carbon impact of flexibility services in future years.

Summary of engagement

Our approach to Stow and Burton Pidsea	
Feedback	**Resulting actions**
Stakeholders satisfied with our decision not to procure flexibility services at these two sites, and to use voltage regulators instead.	Confirmed this decision to stakeholders and executed decision.

Bilateral engagement with potential flexibility services providers	
Feedback	**Response**
1. Interest in a contract form that provides for some flexibility in volume of flex provided, particularly from aggregators offering flex from a portfolio that is expected to increase, e.g. as EV uptake increases and smart charging is more widely adopted.	We are investigating with our procurement colleagues how the ability to update revised volumes by mutual agreement could be incorporated into the tender process and contract form, while still being compliant with procurement regulations and delivering best value.
2. Interest in a low minimum capacity for flexibility services, i.e. contracting for a nominal rather than material volume. This would enable pilots of flexibility services with providers, with particular interest from stakeholders bringing forward aggregated small scale flexibility e.g. from household demand, EV charging.	This is a potential method for us to innovate with the use of aggregated domestic-scale flexibility and stimulate markets where we expect a growing need for these services.

Bilateral engagement with potential flexibility services providers	
Feedback	**Response**
3. Collaboration and standardisation through Flexible Power and Open Networks is welcomed.	We will continue to participate in Flexible Power and Open Networks.
4. Some providers report that other flexibility markets are more lucrative, and that the highly localised DNO markets limit the size of the opportunity. Further, decisions on where assets are located would not be based on the availability of DNO flexibility needs as the volumes offered by DNOs are not significant enough.	While these locational factors do affect the resources available at present to participate actively in DNO flexibility markets, we will continue to engage with flexibility services market participants in an ongoing effort to support the development of distribution flexibility markets and capabilities in our region. In particular, we see that the engagement and contracting with aggregators of a growing DER population at the domestic level (EVs and heat pumps) is key to unlocking more flexibility in the 'right place'.
5. DNO flexibility is not a major revenue stream at present for grid scale battery operators, but it can be factored into optimisation decisions for battery operation. Similarly, providers of flex from EV charging anticipate that, compared to price signals from wholesale markets, the impact of DNO contracted flex purchasing on charging schedules will be lower.	Forecasting our flexibility needs will continue to be a high priority for us as the need grows through the next regulatory periods.
6. Piclo Flex was highlighted as a very useful platform as it makes it easy for the provider to register their assets and see quickly whether they are in zones where a competition is open.	Currently we use Flexible Power as our main channel for notifying about locations where we may procure flexibility. We expect the choice of flexible platforms to grow, opening up new opportunities for us and also the need to ensure inter-operability.

Bilateral engagement with potential flexibility services providers	
Feedback	**Response**
7. Providers need time to engage with their clients about participation in DNO markets so a long lead time ahead of a tender is helpful. Even a basic 'coming soon' signpost can be helpful to allow the aggregator time to raise client awareness. Understanding future opportunities is important for parties interested in planning, building and connecting assets in our region which can take 2-3 years.	We will continue to notify the market of our expected flexibility requirements through a range of channels and we will issue calls for competition to provide advance notice of upcoming tender opportunities.
8. The ability to trade in near real time as important in maximising returns, for example due to other long-term commitments to in other flexibility markets, or due to growth in the scale of flexibility available. Progression towards shorter term flexibility trading was highlighted as a valuable step in optimising usage of assets.	We are participating in an Open Networks initiative that is considering how to progress towards flexibility procurement in near real time. We are also tracking innovation activity in this area.
9. Provider would like to see more development on the baselining methodologies used by DNOs, particularly how previous generation history is accounted for if the services weren't procured by the DNO in question	Baselining methodology is a product in Open Networks.

Bilateral engagement with potential flexibility services providers	
Feedback	**Response**
10. Providers hold a range of views about what is most important to their participation in distribution flexibility markets: • Ease of operation of flexibility services, including automated and API dispatch mechanisms. • Clear statements of requirements and event forecasts to enable provider to weigh up value of a contract. • The attractiveness of the contract which is enhanced by factors such as the length of contract, the use of availability fees, the frequency of availability windows and utilisation instructions, as well as by price. • Simple and slick flexibility procurement process. • Processes need to be streamlined and accessible and appropriate for aggregators as well as for asset owners/operators.	The Flexible Power system and our enabling processes addresses a number of these points in a standardised manner where possible across a number of DNOs. We will continue to take account of the feedback in our 2022 procurement round and in subsequent system and process development.
11. Request that we share information with our customers to facilitate aggregators and facilitators of flexibility services to reach customers who have the capability to provide flexibility services.	We advised that Section 105 of the Utilities Act prevents us from passing information about connected customers to the aggregator for the purposes of the aggregator's business development. Further, that for us to pass information about the aggregator's services to our customers would not be compliant with our obligation to be non-discriminatory.
12. Interest from stakeholders in contract duration longer than one year, e.g. two to three years	We are considering this issue and will decide on approach prior to issuing our next tender e.g. initial term, possibility of extending the initial term.

Signposts to relevant information

https://www.flexiblepower.co.uk/locations/northern-powergrid has information on our flexibility procurement activity which will be updated with information on how to access tender information

To register to receive more information about procurement information and any upcoming events, or to discuss flexibility services, please contact us at flexibility@northernpowergrid.com

4. ECONOMIC VIABILITY

Analyses to determine the economic viability of the procurement of flexibility services

17. We identified that interventions were needed to ensure security of supply under fault conditions at two of our primary substations, Stow and Burton Pidsea, and we considered both network solutions and flexibility services.

Normanby by Stow

- 33/11kV single transformer primary substation in Lincolnshire
- Network intervention needed under engineering regulations to ensure voltages remain in statutory limits under fault conditions

Network smart solution	**Network flexibility (Smart) solution: voltage regulators at cost of £500k**

Flexibility Option

Seek flexibility providers in suitable postcodes under the following service requirements:

- 4,435 MWh of availability windows per year (3,696 hours at 1.2MW peak requirement)
- 4,435 MWh of flexibility provision (pre-emptive demand management service)
- Demand side response or generation turn up would be suitable

Burton Pidsea

- 66/11kV single transformer primary substation near Hull
- Network intervention needed under engineering regulations to ensure voltages remain in statutory limits under fault conditions

Network smart solution	**Network flexibility (Smart) solution: voltage regulators at cost of £500k**

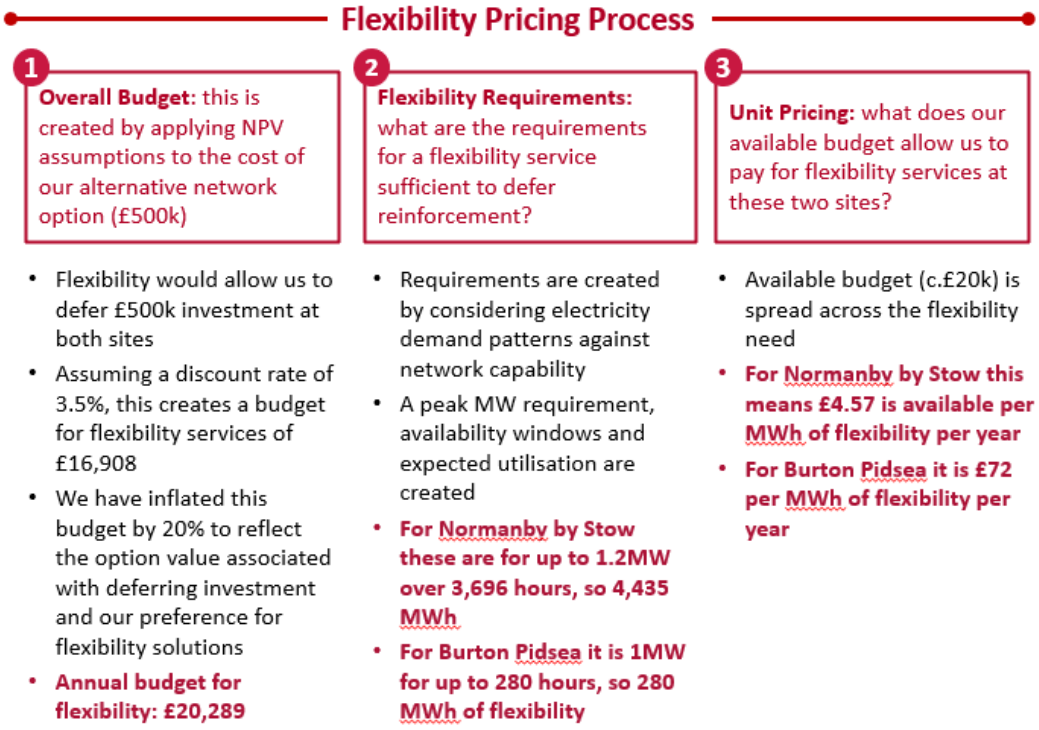
Flexibility Option

Seek flexibility providers in suitable postcodes under the following service requirements:

- 280 MWh of availability windows per year (280 hours at 1MW peak requirement)
- 280 MWh of flexibility provision (pre-emptive demand management service)
- Demand side response or generation turn up would be suitable

18. Our market intelligence indicated ~£300 per MWh as a unit price for flexibility services to defer network investment. We didn't want to offer flexibility at prices that would be unattractive as we were concerned that this may frustrate providers and harm the long term development of markets in our region. However, paying £300/MWh would lead to us exceeding available budget by c.6500% at Stow and 414% at Burton Pidsea. The availability of a low cost alternative solution

meant that offering market rate prices for flexibility at these locations would not be an economic or efficient option for our customers.



Market assessments for the procurement of flexibility services flexibility services

19. Our analysis indicated that going to tender for flexibility services at Stow and Burton Pidsea would not result in a contract that was a more economic and efficient solution than deploying voltage regulators, and we did not want to undermine trust or the long term development of flexibility markets in our region with pricing offers that are significantly below market rates.

20. In June 2021 we published our preliminary decision not to start flexibility services procurement and the reasoning was available on our website for four weeks to allow stakeholders time to feed back (which closed on 25 July 2021). We also proactively met bilaterally with flexibility market participants to validate our thinking and gather perspectives.

21. We did not receive any differing views or challenge during the four-week window for feedback and our proposals met with support during our bilateral engagements. Therefore, in August we finalised our decision to proceed with a network flexibility solution at these locations rather than seek flexibility services and published the final network options assessment confirming this.

5. CARBON REPORTING

22. For the year 2021/22 we did not deploy flexibility services so there is no carbon reporting in respect of this year.

23. However, we are participating in the development of a consistent methodology[3] to evaluate and report on the carbon intensity of our use of flexibility services, and we expect to incorporate this methodology into the next Procurement Report in a year's time.

[3] Product 7 of workstream 1A of the Open Networks project in 2022