Distribution Flexibility Services Procurement Report

April 2023

nationalgrid

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Executive summary

This Distribution Flexibility Services Procurement Report looks back on the Flexibility Services we are procured and operated in the 22/23 regulatory year.

This report provides an annual summary of what we have procured & operated as well as how we have engaged with stakeholders, how we ensure our process remain economic and efficient as well as a view on the carbon intensity of the services. Throughout, and summarised in Appendix 2, we point to the further data sources so you can track our progress in a more granular manner.

It sits, alongside the forward looking Procurement Statement published in April, which provides summary of our plans going forwards to the next year.

These two documents summarise the processes for how we identify the need for flexibility services, how we seek to procure them and then how we operate them.

These are designed to provide market efficiency whilst balancing the needs for simplicity and accuracy, and have evolved as we have gained experience, and engaged with our key stakeholders.

This year we have continued to procure flexibility services across a 47 zones. We have secured additional volume, but many requirements remain. We have also increase dispatch volumes, now totalling over 1.7GWh and including more than 3000 dispatch events. This is driven by the participation of many new demand response customers focussed on shifting LCTs.

We continue to operate a flexibility first process with 121 schemes considered in our DNOA.

We have continued to engage with our stakeholders through our evolution of distribution flexibility services document and webinar and have removed the formal consultation to reduce stakeholder burden.

Finally we have updated our carbon reporting methodology to implement the common process developed by the Open Networks project. This builds on our previous methodology by considering the consequential impact of the services.

It should be noted that, as covered in our Procurement Statement, a number of the processes we use for the procurement of flexibility services will change in the coming regulatory year. As such readers should be clear that some of the processes referred to will be superseded imminently. We have made this clear throughout the documentation.

For further information please contact:

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1. Introduction

National Grid Electricity Distribution is a Distribution Network Operator (DNO) and a Distribution System Operator (DSO), responsible for distributing electricity to 8 million customers. We look after a network of wires, poles, pylons, cables and substations; distributing electricity to homes and businesses across the West Midlands, East Midlands, the South West and South Wales

We have been procuring Flexibility Services since 2018 and now operate a “flexibility first” approach. By managing temporal peaks on the network, we can avoid overloading assets and hence push back the need to invest in more assets.

This Distribution Flexibility Services Procurement Report (and the accompanying data template) summarises the services we have procured and used in the last regulatory year. It forms part of a yearly regulatory process involving the publishing of forward looking Procurement Statement, looking at how we will procure in the coming regulatory year, and the backwards looking Procurement Report, looking at what we have procured. These publications are mandated as part of our Distribution Licence (Condition 31E), and aim to build a minimum level of information required to promote a competitive market for Flexibility Services.

We have established a robust process for the assessment, procurement and then operation of Flexibility Services. This has been formed by our experience of building the services out from innovation projects in a full business as usual process and featured regular feedback and improvement from our stakeholders. This report aims to highlight these processes and point towards existing data sources where possible, providing an overview of our activity to date whilst allowing detailed investigation where desired.

The report covers:

- Summaries of where we have procured and operated services,
- A review of the stakeholder engagement carried out in the last year,
- The processes used to assess the economic viability of Flexibility Services, and individual bids,
- A view on the carbon intensity of our services,
- Further details to help understand the supplementary data, &
- A summary of the related publications and data sources.

Should you have any queries about the contents of this report please contact: NGED.Flexiblepower@nationalgrid.co.uk.

2. Flexibility Procurement and Use Summary

2.1 The Services we have procured and operated

As detailed in section 2 of our Procurement Statement for 22/23 we have a robust process for the identification, communication, procurement and then operation of Flexibility Services. The tables below provide a brief summary of the service procured over the last year as per the Supporting Data.

It should be noted that as per the regulatory guidance, these are based on the zones where we have tendered for additional services in the past year. As such this does not include zones where active procurement of new capability has ceased, but where we may still dispatch previously contracted flexibility services.

Table 1: Summary of Flexibility Service Procurement by Product

Product	Forecast Requirement in the Procurement Statement (MW)*	Contracted in prior years (MW)**	Contracted in reporting year (MW)**	Remaining requirement (MW)***
Sustain	0.00	0.00	0.00	0.00
Secure	110.75	101.13	49.13	73.57
Dynamic	277.28	148.16	105.11	156.59
Restore	388.03	249.29	154.24	230.16

** The Procurement Statement forecasts do not include new constraint zones which have been opened for procurement during the regulatory year.*

*** The Contracted MW capacity will include the full contracted MW, even if it exceeds the requirement.*

**** The remaining volume is calculated as a simple subtraction of the contracted peak MW capacity from the required peak MW capacity in each individual zone. Where the contracted MW value was higher required, the remaining requirement was set to 0. This ensures that when aggregating zones in different ways, the remaining requirement isn't masked by the over-procurement of other zones.*

As the calculation for the remaining requirement is done at an individual CMZ, and then grouped into products, a direct correlation between the columns in this table may not be obvious.

Due to our clearing strategy, which requires redundancies for competitive markets and network security, it is possible have a 0MW requirement in a zone, whilst still not hitting our required thresholds for a competitive market or network security.

Full details of the services procured and operated can be found in the accompanying Supporting Data. It should also be noted that we publish extensive data on our Connected Data Portal. For full details on the data we publish see Appendix 2.

Table 2: Summary of Flexibility Service Procurement by Zone

CMZ Name	Products	Postcodes	Forecast Requirement in the Procurement Statement (MW)*	Contracted in prior years (MW)	Contracted in reporting year (MW)	Remaining requirement (MW)**	Reasons not met	Dispatched (MWh)
Aberaeron	Dynamic & Restore	SA4 SY2	0.76	0.4	0.0	0.4	*insufficient market volume*	0.0
Alfreton	Dynamic & Restore	DE5	0.00	1.4	0.0	0.0		0.0
Alfreton	Secure & Restore		3.10	5.0	0.0	0.0		0.0
Apollo - Tamworth	Secure & Restore	B78 B79 WS1	0.95	6.5	0.0	0.0		2.0
Berkswell SGT	Dynamic & Restore	B92 B93 B94 B95 CV1 CV2 CV3 CV4 CV5 CV6	0.00	0.2	5.0	0.0		0.0
Berkswell SGT	Secure & Restore		10.15	0.0	0.1	10.1	*insufficient market volume*	0.0
Bridgwater/Street	Dynamic & Restore	BA1 BA2 BA4 BA5 BA6 BA7 BS2 TA1 TA2 TA3 TA4 TA5 TA6 TA7 TA8 TA9	20.94	19.8	63.2	0.0		0.0
Bridgwater/Street	Secure & Restore		0.00	2.0	0.0	0.0		675.5
Chesterfield Main	Secure & Restore	DE5 S42 S45	3.88	7.0	0.0	0.0		1.7
Chewton Mendip	Secure & Restore	BA3 BA5 BS3	Not applicable/ New zone	0.0	6.0	0.0		0.0
Clowne	Dynamic & Restore	S21 S43 S44 S80	1.56	1.6	0.7	0.0		17.7
Clowne	Secure & Restore		0.00	5.0	0.0	0.0		0.0

CMZ Name	Products	Postcodes	Forecast Requirement in the Procurement Statement (MW)*	Contracted in prior years (MW)	Contracted in reporting year (MW)	Remaining requirement (MW)**	Reasons not met	Dispatched (MWh)
Coalville	Dynamic & Restore	CV1 CV9 DE1 LE1 LE3 LE6 LE9	35.40	12.8	1.2	21.4	*insufficient market volume*	18.1
Countess Wear	Secure & Restore	EX2 EX3	Not applicable/ New zone	0.0	0.0	1.0	*insufficient market volume*	0.0
East Aberthaw	Dynamic & Restore	CF1 CF3 CF5 CF6 CF7	10.89	0.2	0.0	10.7	*insufficient market volume*	6.9
East Yelland	Dynamic & Restore	EX3	10.64	7.7	30.0	0.0		6.4
Feckenham South	Dynamic & Restore	B49 B50 B96 CV3 CV4 GL5 OX1 OX7 WR1 WR7	19.99	13.9	0.0	6.1	*insufficient market volume*	87.2
Grassmoor	Secure & Restore	DE5 S41 S42 S44 S45	2.73	7.9	0.0	0.0		20.2
Grendon - Corby 132kV	Dynamic & Restore	LE1 LE7 LE8 LE9 MK4 NG3 NN1 NN2 NN6 NN8	42.55	0.0	0.0	42.6	*insufficient market volume*	0.0
Grendon - Corby 132kV	Secure & Restore		42.55	0.0	0.1	42.5	*insufficient market volume*	4.9
Gunnislake	Secure & Restore	PL1	Not applicable/ New zone	0.0	0.0	1.8	*insufficient market volume*	0.0
Hayle - Camborne	Dynamic & Restore	TR1 TR2 TR4	52.58	9.8	0.0	42.8	*insufficient market volume*	6.0
Hayle - Camborne	Secure & Restore		0.00	1.0	0.0	0.0		0.0
Hemyock	Dynamic & Restore	EX1 TA2	1.43	1.0	0.0	0.5	*insufficient market volume*	1.4

CMZ Name	Products	Postcodes	Forecast Requirement in the Procurement Statement (MW)*	Contracted in prior years (MW)	Contracted in reporting year (MW)	Remaining requirement (MW)**	Reasons not met	Dispatched (MWh)
Hereford - Ledbury Ring	Secure & Restore	GL1 GL2 HR1 HR2 HR8 HR9 NP2 WR1	6.93	6.6	0.0	0.3	*insufficient market volume*	17.7
Hereford BSP	Secure & Restore	HR1 HR2 HR3 HR4 HR7 HR8	5.08	7.2	43.0	0.0		33.6
Ilkeston	Dynamic & Restore	DE7 NG1	10.23	2.9	0.0	7.3	*insufficient market volume*	1.6
Isles of Scilly	Secure & Restore	TR2	0.36	1.4	0.0	0.0		0.0
Laneast	Secure & Restore	PL1	0.36	0.0	0.0	0.4	*insufficient market volume*	0.0
Lincoln-Anderson Lane	Secure & Restore	LN1 LN2 LN6 LN8 NG2	5.20	4.7	0.0	0.5	*insufficient market volume*	16.9
Llandrindod - Rhayader	Dynamic & Restore	LD1 LD2 LD6 LD7 LD8 SY1	1.17	6.3	0.0	0.0		13.2
Llanfyrnach	Dynamic & Restore	SA3 SA4	2.71	0.4	0.0	2.4	*insufficient market volume*	0.0
Loughborough	Dynamic & Restore	LE1 LE6 LE7	15.83	8.4	0.0	7.4	*insufficient market volume*	1.6
Mackworth	Secure & Restore	DE1 DE2 DE3 DE6	1.38	1.2	0.0	0.2	*insufficient market volume*	25.5
Manton	Dynamic & Restore	NG2 S80 S81	0.00	1.2	0.0	0.0		0.0
Manton	Secure & Restore		2.18	0.0	0.0	2.2	*insufficient market volume*	8.2
Moretonhampstead	Dynamic & Restore	EX6 TQ1	0.85	6.1	0.0	0.0		0.0

CMZ Name	Products	Postcodes	Forecast Requirement in the Procurement Statement (MW)*	Contracted in prior years (MW)	Contracted in reporting year (MW)	Remaining requirement (MW)**	Reasons not met	Dispatched (MWh)
Morwenstow	Dynamic & Restore	EX2 EX3	Not applicable/ New zone	0.0	0.0	1.2	*insufficient market volume*	0.0
Mountain Ash	Secure & Restore	CF3 CF4	2.04	18.7	0.0	0.0		0.0
Mullion	Dynamic & Restore	TR1	0.00	0.6	0.0	0.0		0.0
Mullion	Secure & Restore		1.22	0.0	0.0	1.2	*insufficient market volume*	0.0
New Dove Valley	Secure & Restore	DE1 DE6	3.05	2.4	0.0	0.6	*insufficient market volume*	3.0
Pembroke	Dynamic & Restore	SA3 SA6 SA7	1.65	6.2	0.0	0.0		0.0
Pembroke	Dynamic & Restore	SA6 SA7	5.80	5.7	0.0	0.1	*insufficient market volume*	0.0
Pembroke	Dynamic & Restore	SA6 SA7	0.80	5.6	0.0	0.0		0.0
Probus	Secure & Restore	TR1 TR2 TR4	Not applicable/ New zone	0.0	0.0	10.8	*insufficient market volume*	0.0
Roundswell	Dynamic & Restore	EX3	0.00	1.0	0.0	0.0		0.0
Roundswell	Secure & Restore		1.70	0.0	0.0	1.7	*insufficient market volume*	0.0
Sharnbrook	Dynamic & Restore	MK4 NN1 NN2	Not applicable/ New zone	0.0	0.0	5.6	*insufficient market volume*	0.0
Stokenham	Secure & Restore	TQ6 TQ7 TQ9	0.34	0.0	0.0	0.3	*insufficient market volume*	0.0
Tiverton	Dynamic & Restore	EX1 EX4 EX5 TA2 TA4	14.37	18.5	5.0	0.0		17.3

CMZ Name	Products	Postcodes	Forecast Requirement in the Procurement Statement (MW)*	Contracted in prior years (MW)	Contracted in reporting year (MW)	Remaining requirement (MW)**	Reasons not met	Dispatched (MWh)
Trevaughan	Dynamic & Restore	SA3	0.00	0.9	0.0	0.0		0.0
Trevaughan	Secure & Restore		3.02	5.0	0.0	0.0		0.0
Truro - Truro Treyew	Dynamic & Restore	TR1 TR2 TR3 TR4 TR5	8.12	2.6	0.0	5.5	*insufficient market volume*	56.0
Weston Super Mare	Dynamic & Restore	BS2 TA8 TA9	10.00	7.3	0.0	2.7	*insufficient market volume*	9.0
Weston Super Mare	Secure & Restore		0.00	13.7	0.0	0.0		0.0
Witheridge	Secure & Restore	EX1 EX3	0.64	6.0	0.0	0.0		0.0
Woodbeck	Dynamic & Restore	DN2 NG2	2.19	5.8	0.0	0.0		0.0

**** *This is a high level view of the post codes, condensed to allow for visibility on this table. The list of full postcodes is available in our requirements publications on the connected data portal*

Some zones were launched in our second procurement round of the year, and hence had no forecast in the first round of the year when the Procurement Statement was published.

It should be noted that due to our process for the identification of network needs, and assessing the value of flexibility services, we expect deviations from the forecasts in our Procurement Statement. This could be due to a number of reasons including:

- The identification of new network requirements,
- Customer driven works,
- Under subscription of the services,
- Over subscription of the services (especially where volume is only available in large increments),
- Over/under delivery by participants,
- Pricing changes due to competition, &
- Inherent forecasting inaccuracies.

We currently operate an “informed procurement” process with the ESO for certain services (ODFM and BM wider access). This allows us to highlight where potential conflicts might occur (such as the presence of an ANM scheme).

We are also working to roll out further coordination through the deployment of the MW Dispatch service in the South West as part of our Regional Development Programmes. We have also co-lead the Open Networks Primacy product and will deploy the associated rules and processes where applicable.

2.2 When we procured services

As detailed in section 3 of our Procurement Statement, we operated 2 procurement rounds in the calendar year (3 in the regulatory year due to the cut offs). The key dates are highlighted in the figure below.

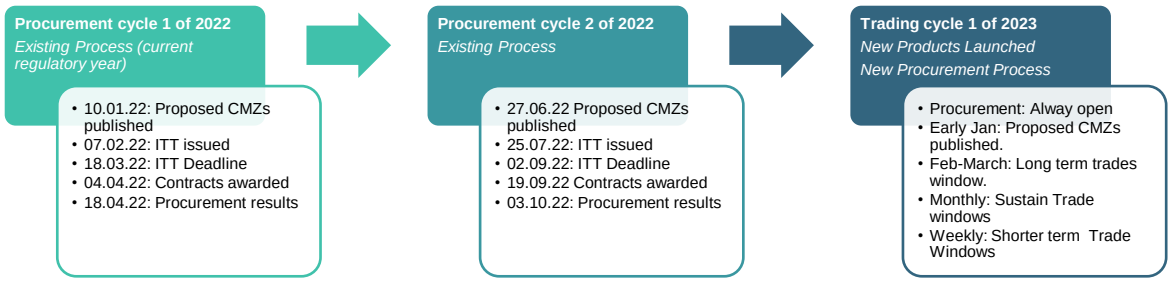


Figure 1: Procurement Timeline (as per Procurement Statement)

This timings were met for the Procurement Cycles in 2023.

In December we updated our Procurement Statement to reflect a more detailed position on our new Trading process. This included updating the timings of the Trading Cycle. The date for publishing new CMZ was amended to February. These were indeed published on the 13th of February 2023.

The updated dates going forwards in covered in our latest Procurement Statement.

We received no feedback following either the procurement cycle this year.

3. Stakeholder Engagement

3.1 Engagement around Flexibility requirements

As detailed in section 2.2, we procured services from the market in line with the timelines set out in our Procurement Statement.

Our tendering processes were developed to be objective, transparent and market based. They are designed to be as simple as possible whilst maintaining compliance with the Utilities Contract Regulations. These regulations impose strict requirements on how utilities procure services. Since 2019 we have used a Dynamic Purchasing System (DPS) to manage pre-qualified parties enabling their eligibility to tender into all our published procurement cycles. Our experience of using the DPS has fed into the procurement processes developed within the Open Networks project.

The DPS splits the procurement activities into two key stages.

- Initially Flexibility Service Providers (FSPs) pre-qualify, joining the DPS. The DPS holds a record of all parties who have completed a pre-qualification process to be eligible to tender for demand response services in any of our current or future zones. Eligibility to join the DPS is not assessed on technical ability or on geographical location of assets, only company/individual address and contact details must be provided. To join the DPS, FSPs respond to our annual PIN. They are then sent our simple Pre-Qualification Questionnaire, which once completed and assessed completes their registration to the DPS.
- Once parties have successfully been added to the DPS will be invited to all future tenders. In line with our Procurement Timeline we launch two Invitation to Tenders (ITTs) a year. These focus on the geographic locations of assets, as well as the technical ability of the participant. They also invite FSPs to enter a best and final price that will be used should stage 2 pricing be achieved.

Our Procurement activities were supported by a range of promotional activities to maximise participation, as well as feedback processes to allow us to continually improve our processes. Information on our pre-qualification requirements as well as all other relevant information were available on the Flexible Power Website. We have summarised the full list of relevant documents in Appendix 2. The publication of our requirements, were accompanied by promotion to increase market awareness and drive participation. This included promotion to our update service, social media posts, webinars, surgeries, one to one engagement and the attendance of relevant events. This targets a wide range of stakeholders to ensure all relevant parties are aware of the opportunity and the response required.

It should be noted that moving forwards, as detailed in our latest Procurement Statement, we are adjusting the way in which we procure Flexibility Services, with a key new tool, our online Market Gateway.

Our Requirements were published to a number of places as shown in the figure below.

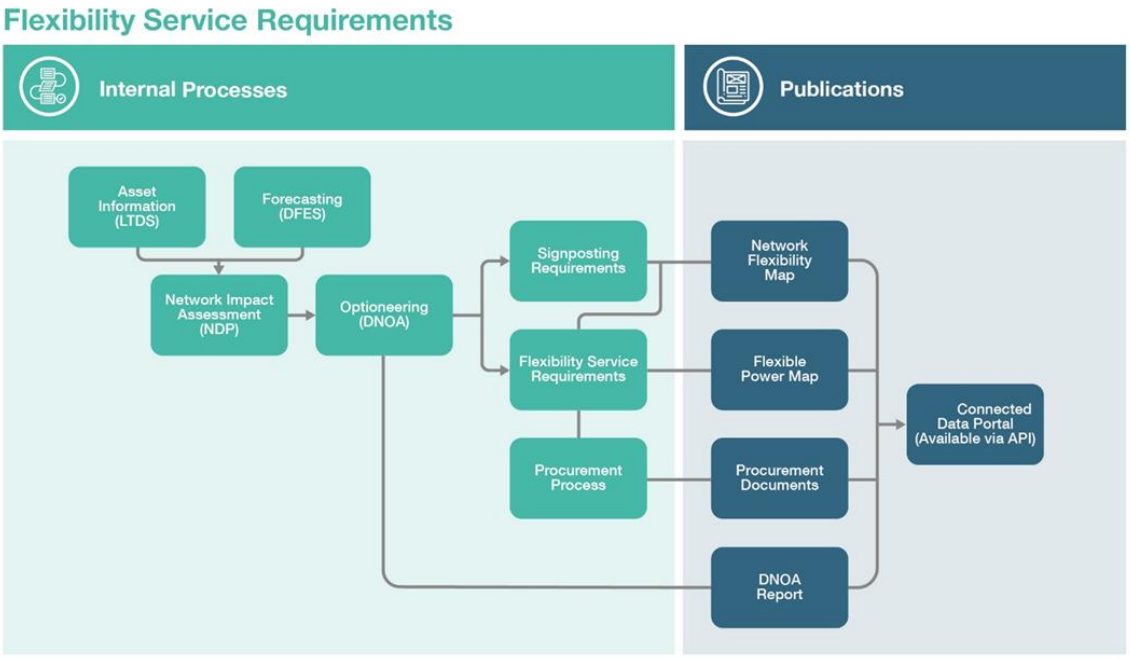


Figure 2: Network Requirement publications (regulatory year 2022/23)

Once each procurement round has been completed, we then focus on collecting feedback on how we could improve how we publish requirements and the DNOA process.

As highlighted in section 2.2 we received no feedback from the engagement for either procurement.

Section 3.3 details the engagement we conducted on the services we procure.

We are always looking at how to improve this process and ensure we are engaging in accessible and meaningful ways. If there are any options we should be considering, do let us know.

3.2 Engagement with ESO and DNOs

We recognise that we are one actor amongst many in an ever more complex energy market place. As such, in addition to our wider engagement, we endeavour to engage heavily with the other network licensees.

A key part of this is through our active involvement at the Energy Network Association, especially the Open Networks project, where we have worked with the other licensees to develop and adopt common approaches across a range of DSO related activities. Work stream 1A focussed on the development of Flexibility Services. Its key objectives included:

- Bringing more transparency in how DNOs facilitate local markets for flexibility and make decisions to provide more confidence in independent decision making.
- Simplifying participation in local flexibility markets through standardisation of approaches across DNOs and between DNOs and the ESO.

Addressing barriers to participation in flexibility markets and facilitate stacking of revenues across multiple markets.

The Open Networks project has built stakeholder engagement into its processes. This covers regular engagement via the Challenge and Dissemination Groups as well as consultations on the Program of Works as well as the content of the work streams.

In the last year we have:

- Aligned with the ESO's method of procurement through the early adoption of the Service Terms structure for the Standard Flexibility Agreement. This allows the implementation of trades. This will align with the other DNOs when version 2 of the Standard Flexibility Agreement is finalised and implemented later this year.
- Aligned with the standardised procurement timelines for our long term products.

We will continue to align with the outcomes of the Open Networks project as they are completed.

In addition we have engaged actively with other licensees directly when needed. Examples of this include:

- Our collaboration with the ESO and other relevant DNOs on the Regional Development Programmes (RDPs). The RDPs look across the whole-system landscape to identify key areas of development to unlock additional network capacity, reduce constraints and open up new revenue streams for market FSPs. Building on the work of Open Networks we are developing flexibility markets to manage distribution and transmission system needs. This includes the MW Dispatch service that will enable the ESO to better manage transmission constraints in the South West.
- We engage in the monthly Whole Electricity Join Forum with the ESO, DNOs and TOs.
- By opening up our Flexible Power brand and processes to other DNOs we have looked to increase alignment and collaboration within the industry. The collaboration will help streamline the process for flexibility providers and make interfacing with DNOs simpler and easier by avoiding the complexities and resource intensity associated with liaising with numerous network operators. We intend to work in partnership to further develop the Flexible Power brand and develop the portal functionality to enable interface capability with other flexibility platforms so wider market participation options can increasingly be made available to providers.

3.3 Engagement about products and process

In addition to what we procure, we also sought stakeholder feedback on how we procure services. We targeted key stakeholders including those who have been involved in various elements of the process as well as wider industry stakeholders, including the ESO and other DNOs. This was conducted in two key stages:

- In November we developed a number of proposed changes for our services into our Evolution of Flexibility Services document . We then carried out engagement over November and December with a series of webinars. These are available on our website.
- As well as content on how we procure, we also asked questions on how we engage with providers. With support from our Stakeholders we dropped our formal consultation to reduce stakeholder burden.

As detailed in section 3.2 we also incorporated the outcomes of the Open Networks project into our processes to increase alignment.

3.4 Contact details

We have a wide range of options for engaging with stakeholders as highlighted above.

To join our Update Service please visit: https://www.flexiblepower.co.uk/contact .

You can also contact us directly at NGED.Flexiblepower@nationalgrid.co.uk.

A full list of documents is covered in Appendix 2.

4. Economic Viability

4.1 Flexibility Service Requirements

As highlighted in section 5.1 of our Procurement Statement, we have a robust process for the assessment of Flexibility Needs.

Our Long Term Development Statement (LTDS) highlights the assets that make up our network. Feeding in the forecasting of Load Growth from our Distribution Future Energy Scenarios (DFES) allow us to understand how the loadings on the network will change. This feeds into an evaluation of the limitations on then network in the Network Development Plan (NDP). The Distribution Network Options Assessment (DNOA) process then compares the options for managing any potential constraint. Built around the ENA's Common Evaluation Methodology, this assesses the most effective routes forwards. The optimum solutions from the DNOA then feeds into our Procurement of Flexibility Services.

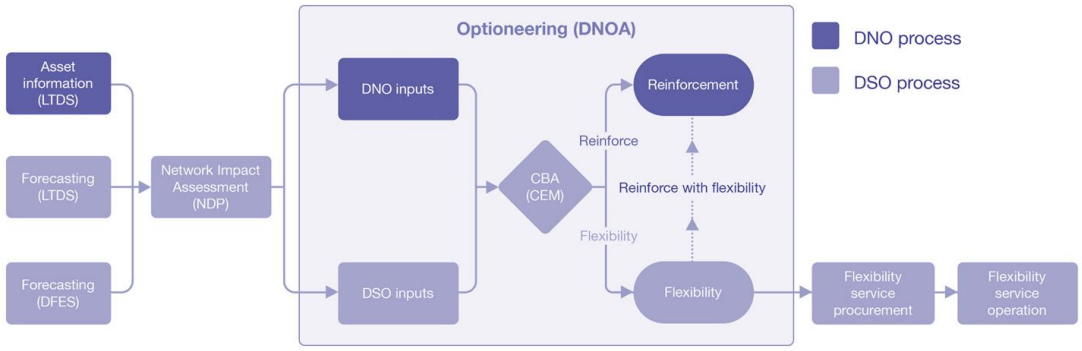


Figure 3: Determining Flexibility Requirements

The summary below highlights the breakdown of the investment decisions for all the schemes from our latest DNOA document (February 23).

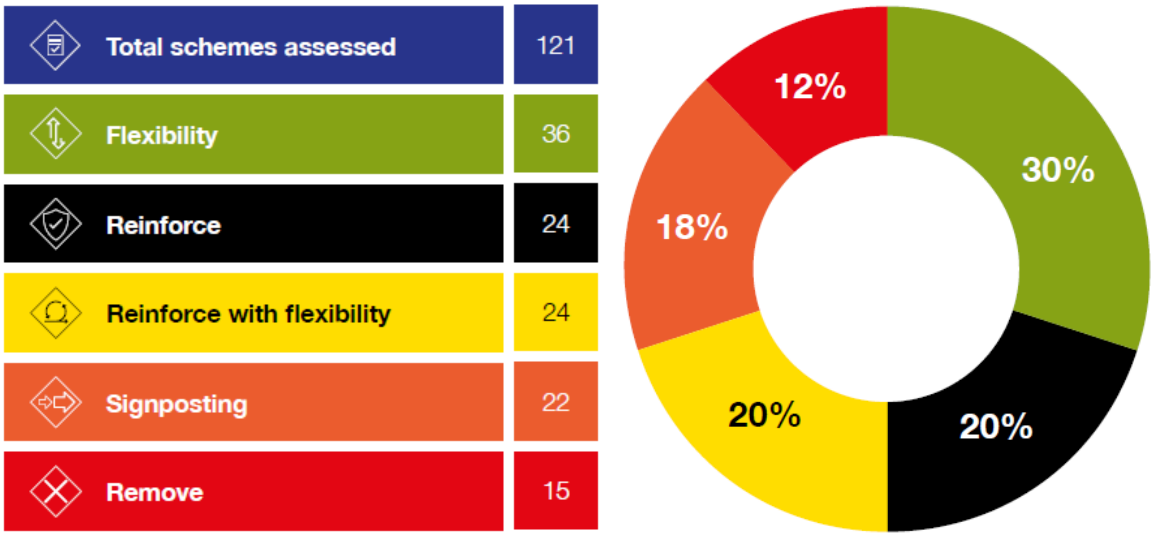


Figure 4: DNOA summary from February 23

Further details are available in the latest DNOA document (https://www.nationalgrid.co.uk/network-strategy/distribution-future-energy-scenarios/distribution-network-options-assessment), including the areas selected for procurement.

As detailed in our latest Procurement Statement, we are working towards delivering Energy Efficiency products in ED2.

4.2 Flexibility Service Selection

As highlighted in section 5.2 of our Procurement Statement, we have a detailed process for procurement of Flexibility Services, including a clear methodology for how we select which services to procure and then instruct services.

Since 2019, we have been operating a pricing structure that is dependent on the level of competition revealed through the procurement process. Each CMZ is assessed independently because of variations in the number of FSPs and scale of flexibility provision. We have established a multi layered strategy, with each phase reflecting the maturity of the market. The prices paid are based on the availability of flexibility in each CMZ. This starts with fixed pricing for non-competitive markets and builds towards more market base mechanisms with maturity and liquidity.

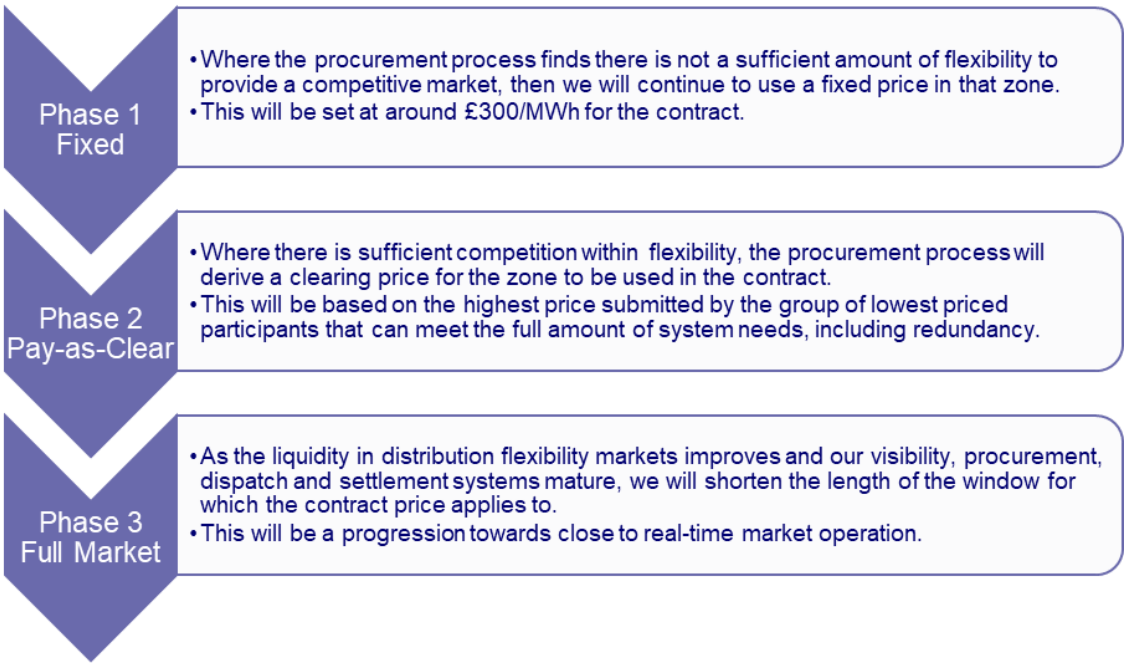


Figure 5: Pricing Strategy

Given the early stages of the market development, all zones were in in Phase 1.

The fixed pricing utilised in our services in Phase 1 is highlighted below. These feed into the performance related payment mechanics. More details can be found in our Payment Mechanics document (https://www.flexiblepower.co.uk/downloads/603)

Table 3: Fixed Prices

	Arming	Availability	Utilisation
Secure	£125/MW/H	N/A	£175/MWh
Dynamic	N/A	£5/MW/H	£300/MWh
Restore	N/A	N/A	£600/MWh

More details can be found in our competition testing and pay-as-clear process in our Clearing Process document (https://www.flexiblepower.co.uk/downloads/178).

It should be noted that as detailed in our Procurement Statement, going forwards we will be using zonal Ceiling Prices with a Pay as Clear Mechanism.

Our Dispatch principles are set out in section 2.2.3 of our Procurement Statement. As we operated a fixed price or pay-as-clear pricing structure, there is no differentiation in price between FSPs. However we do optimise our instructions, instructing in an order which most closely aligns to the required flexibility. We will considered the following factors to optimise our decisions.

Table 4: Dispatch Principles

Principle	Description	In Practice
Security	The needs of the system will be met using flexibility in such a way that security of supply is maintained.	DSO/DNO requirements: Conform with applicable standards with an appropriate management of risk.
Cost	Flexibility will be operated to meet system need at the minimum level of cost.	Lowest prices per MWh and minimum levels of over procurement. Flexibility will be procured in cost order and will not unduly discriminate against any provider.
Operability	DSOs will seek to instruct services that offer compatible levels of operability.	Provider characteristics: availability, reliability, run times, response times etc… Accepted offers need to match/partially match requirements.

As our operational experience increases, we will use this information to provide feedback to FSPs in areas and support them to maximise their value to the system.

More details about this process can be found in our Acceptance and Dispatch Document: https://www.flexiblepower.co.uk/downloads/681.

As detailed in section 3.1 we received no feedback on this process.

4.3 Market Assessment

As detailed in section 3, we have conducted extensive stakeholder engagement to ensure our products remain relevant and valuable for different service providers.

This involved:

- Options for feedback following the publication of the DNOA document,
- Options for feedback following a procurement round,
- Our informal engagement through our Evolution of Flexibility Services document,
- Engagement in the Open Networks Project and its associated stakeholder engagement and governance, &

Off the back of this engagement we have implemented/planned a number of improvements including:

- The continued delivery of an online, digitized procurement hub,
- An amended procurement process to allow for the development of flexibility products across different timelines, including longer term products, &
- Refinements to design on our Sustain product to allow for individual zonal pricing and the launch of over 1300 lower voltage zones.

This builds on our existing work made to make our services as stackable as possible. This includes:

- No exclusivity clauses,
- No obligation to provide availability, &
- Timing of availability ahead of wider markets.

We have also considered the impact on the Total System by:

- The operation of the informed procurement process for ODFM and BM Wider Access,
- The development of a coordinated service via the RDPs,
- Co-leading the Open Networks Primacy Product.

5. Carbon Reporting

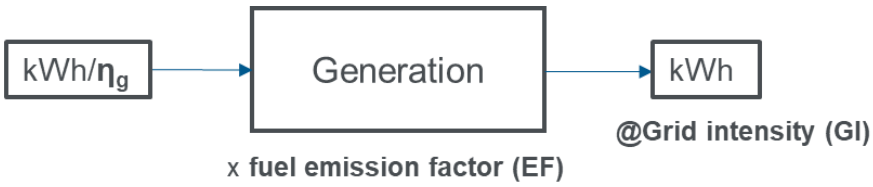
Following our initial quantification of the carbon impact on our services, a common methodology was developed by the Open Networks project in WS1A P7. The latest report can be found here.

This uses a similar basis to our previous methodology, but adds an additional consideration of the consequential carbon impact. These are summarised in the Methodology below:

5.1 Methodology

- The calculations apply to flexibility services requested for an increase in exports or reduction in imports. This is the most prevalent application of flexibility services currently.
- DSO will perform the calculation by technology category without input from providers, except to confirm the technology category where required.
- The calculation includes direct (such as fuel combustion) and consequential carbon impacts (such as battery charging) but excludes indirect impacts (such as embedded emissions in the materials).
- The general formula varies by generation, storage, and demand. In the formulae, kWh is the energy delivered (as opposed to requested) measured at the site of the resource, and η is the energy conversion efficiency.

Generation



- For **generation export**, the carbon impact is:
    1. combustion of the fuel (direct) = + **kWh/η_g x EF**
    2. displacing grid generation (consequential) = - **kWh x GI**
- If the generator is displacing imports, the carbon impact is the same as the equivalent amount exported directly to the grid.
- For bioenergy, report on both inclusive and exclusive of biogenic CO_2 released during burning of biomass and biofuels by using the relevant emission factors.

Storage

- For **storage export**, the carbon impact is:
    1. carbon intensity of the input energy (consequential) = + **kWh/η_s x GI$_i$** (if from grid), or + **(kWh/η_s)/η_g x EF** (if from generator)
    2. displacing grid generation at export (consequential) = - **kWh x GI$_e$**

- If storage input energy is physically supplied from a renewable generator assume zero carbon, this does not apply to non-physical supplies of low carbon electricity, which should assume grid intensity.
- If storage discharge is displacing imports, the carbon impact is the same as the equivalent amount exported directly to the grid.
- Storage import reduction should be calculated as demand, assuming shifted load (100% payback). Where DSO are unsure whether storage is providing export increase or import reduction, use the storage calculation. This ensures carbon impacts are not underestimated and incentivises additional information to be provided.

Demand

- For **demand reduction**, the carbon impact is:
    1. reduced grid imports during the turn-down (direct) = - **kWh x GI_{td}**
    2. increase in grid imports during "payback" (consequential) = + **kWh x payback% x GI_i**
- If demand is shifted, such as deferred EV charging, then payback% is 100%. Otherwise, assume an associated payback as a percentage of the turn-down energy of 21%. Where DSO are unsure, assuming load shifting. This ensures carbon impacts are not underestimated and incentivises additional information to be provided.

The conversion factors are from the following sources.

Table 5: Carbon Conversion Factors

Factor type	Source
Fuel emission factors	BEIS/Defra
Efficiency	BEIS Electricity Generation Costs 2020 – Coal – DUKES – BEIS Storage Costs and Assumptions 2018 –
Grid intensity	Green Book data tables
Payback%	Low Carbon London report

It should also be noted that certain recommendations from the product to amend the supporting data were not implemented ahead of this report. As such we have used supplementary background data to deliver as accurate a picture as possible. This includes looking at delivered energy as well as considering the energy conversion technology rather than just the source of the energy.

5.2 Results

The key outcomes of the analysis are presented below:

Table 6: Carbon Impact of our Distribution Flexibility Services

LC31 Technology Category	Requested energy (MWh)	Delivered energy (MWh)	Direct carbon impact (kgCO2e)	Outside of Scope Direct Carbon Impact* (kgCO2e)	Consequential carbon impact (kgCO2e)
Stored Energy (all stored energy irrespective of the original energy source)	395.5	213.0	0	0	7422
Biofuel - Landfill gas	453.3	372.5	257	255646	-90878
Data not available	59	22.5	12811	0	-5479
Demand	604.5	412.4	-100616	0	100616
Fossil - Gas	223.1	145.0	82733	0	-35382
Total	**1735.3**	**1165.4**	**-4815**	**255646**	**-23701**

** this analysis focuses on the Primary Technology categorisation. We do have some sites with a secondary technology which would impact the carbon reporting. For this analysis we have considered the largest asset as the Primary Technology*

***For Biofuel sites, as per the UK Government GHG guidance for Company reporting, the impact has been split out between elements that are in and outside of scope. These account for the direct CO2 impact of burning the biofuels. The standard in Scope impacts are treated as net "0" as the fuel source itself absorbs an equivalent amount of CO2.*

**** this represents contracts entered into before the requirements to collect data for licence condition C31E were in place. We have assessed the technology on the basis that it is also a Fossil-Gas generator as this is the most onerous condition observed.*

There are a few key observations to pull out from this analysis:

- The addition of the consequential impact reduces the impact of our services. This is due the offset of wider marginal generation on the system
- Due to the high volume of landfill gas being utilised within our services, the treatment of the out of scope emissions have a significant impact on the view of carbon intensity. This is so large that using conventional boundaries, our services contribute to a net carbon reduction. However this changes significantly if the outside of scope carbon is considered.

During the application of this methodology we can see a number of future improvements:

- Adding the delivered energy to the supporting data
- Adding additional technology type information to better map the efficiencies
- Considerations on how we treat contracts with multiple asset types
- Considerations as to whether commercial baselines are appropriate for carbon reporting.

We will feed this into the Open Networks project going forwards

Appendix 1: Supporting data

Please see the associated supporting data for further details on the services we have procured and dispatched in the last regulatory year.

This is a common data template mandated by Ofgem and implemented across all DNOs. As such it cannot capture all the details of our service requirements. See Appendix 2 for more details about the other data we publish.

To further aid interpretation of the data see the list of clarifications below.

Procurement and Use Summary

As required within the guidance document, we have provided one worksheet per licence area. We have also provided a worksheet to present the data across all NGED's four licence areas.

We have not procured any Sustain or Reactive Power services in the last year.

All data in this summary aligns with the Procurement – Locational worksheet.

Contracted in previous years

We have included all the contracted flexibility in zones where we have either tendered for flexibility during the 2022/23 regulatory year, dispatched existing contracts or simply zones where we have awarded contracts for delivery in 2022/23. We have also left the zones previously reported on, even if we have stopped procurement since. We have not amended the data from 2021/22 as such there are a number of blank entries.

Tendered in reporting year

This includes all the tendered volumes throughout the two procurement tranches (T6A and T6B), irrespective of response.

Needs not net

We have made some amendments to how we calculate the remaining requirement, which is detailed in the Procurement – Locational section. To enable a better comparison with the reporting from previous reporting years, we have amended the data in the Summary tables for the previous delivery year (2021/22), under "Needs not met".

Dispatched in reporting year

This includes all the MWh volumes dispatched throughout the regulatory period. We have provided dispatch data for all zones listed for 2022/23. We have not amended the data from 21/22.

Tender Rounds Summary

This data summarises the data in the Procurement worksheet, with locational tenders grouped (by CMZ and procurement round).

We have included all tenders for the two procurement tranches in the regulatory year, regardless of response, to provide better transparency.

Where we have not received any bids, the "Participants" columns has been filled with "None" and "Contracted" (MW) with 0. It should be noted that the Contracted value, covers the volume contracted for 2022/23 delivery only. This differs from the Procurement worksheet where 4 year contracts are shown on 4 separate lines.

The first half of the table shows the response to the main product in the zone (Secure / Dynamic). As Restore is also procured alongside the main products, the second half is for Restore alone which has identical values and providers as the main product.

Procurement

This provides individual tender outcomes by bidding party within the year. Where we have not received any bids within a zone, this has been included with mostly blank cells and 0 bids. This is

different to the 2021/22 report where we have only included tenders where no response was provided.

Restore

We don't tender for Restore as a sole product in a zone, but rather as an additional product attached to the main one (Secure / Dynamic). As such, whenever we procure a Secure or Dynamic product, we also procure the equivalent Restore volumes. This is reflected in the Procurement worksheet by having a second part of the table for Restore.

As Restore isn't subject to competitive bidding, there are no offered values in the table. Also, Restore isn't defined for specific windows or service days required, which is why these columns haven't been filled out.

Tender Reference

This ID combines the Zone and the procurement round to create a unique ID that can be referenced across to the Tender Rounds Summary, and Dispatch worksheet.

Service Location (Grid Supply Point)

Due to the locational nature of our services we have grouped the services by CMZ. This provides more details than GSPs which may require the aggregation of zones.

Flexible Unit Reference

This uniquely identifies a contract rather than a specific Asset.

Main Technology Type

This field is self-entered by FSPs. Given the high proportion of "other" entries this will be reviewed going forwards.

Committed Contracts/Non Committed Contracts

All our services focus on a weekly operational process, and are therefore classified as non-firm.

Connection Voltage

We do not currently collect this information from our providers.

Service days / Service Window FROM/TO

Our CMZ requirements vary on a monthly basis, with different Service days and windows required. For this table we have used the outermost requirements (e.g. the earliest start and latest end of a service requirement throughout the regulatory year).

Full details can be found in our service requirements documents (as highlighted in Appendix 2).

Service Fee

We do not utilise a service fee.

Delivery Year

As each delivery year is treated separately, 4 year contracts appear in the list 4 times. As such care should be taken when interpreting the data.

Procurement – Locational

This worksheet provides a summary of the tender outcomes by CMZ. We have built on last year's data, kept all previous zones even if we have stopped procurement since, and added new zones where we have either tendered for or dispatched flexibility services in the reporting year.

Zones with multiple products have been included separately to differentiate between them. We have also included a total Restore per zone line in the table.

Due to the lag between procurement and dispatch, most zones do not have dispatch volumes associated with them.

Service Location (Grid Supply Point)

Due to the locational nature of our services we have grouped the services by CMZ. This provides more details than GSPs which may require the aggregation of zones.

Contracted in prior years / in reporting year

We have calculated these based on the active contracts for delivery in the reporting year, separated by contract start date.

Remaining Requirement

It is worth noting that the tendered MW value is a maximum peak exceedance that we expect to see on the network at any given point in time during a certain period, and in its current form it does not have a time component. The actual MW requirements will differ in time depending on network conditions.

The peak MW isn't a true and complete reflection of what we are looking to procure in a zone, but rather a maximum capacity we are willing to accept from one single provider. In line with our clearing strategies and required redundancies for network security, would generally look to procure over this requirement.

Due to the above, and the way in which the requirement was calculated in the last submission as a simple subtraction of the tendered volume minus the response, this has resulted in negative "remaining requirement" values in certain zones.

Although negative values show levels of over-procurement in each zone, when these are aggregated in various ways (such as per product, licence areas, etc.), the summation of remaining requirement begins to mask the under-procurement in other zones. In reality, over-procurement in one zone will not compensate for under-procurement in a separate one.

To amend this, we have changed this from the last submission as follows: the remaining requirement is now a subtraction from tendered MW of all contracted MW (contracted either in the reporting year or in the prior years). Where this was negative, the value was set to 0.

To allow for better comparison between reporting years, we have also amended the 2021/22 data in the report.

Dispatch

This data includes all the individual dispatches which occurred throughout the reporting year, between 01/04/2022 and 31/03/2023.

Tender reference

This ID combines the CMZ code and the procurement round to create a unique ID that can be referenced across to the Tender Rounds Summary, and Procurement worksheet.

Incident reference

This ID combines the CMZ code and the date of dispatch.

Incident Location (Grid Supply Point)

Due to the locational nature of our services we have grouped the services by CMZ. This provides more details that GSPs which may require the aggregation of zones.

Flexible Unit Reference

This uniquely identifies a contract rather than a specific Asset.

Main Technology Type

In our older tenders limited information was collected on this data item. As such we have supplemented it with additional data we have on the generation technology collected through our connections process where appropriate.

Service Price

We do not utilise a Service Price.

Pricing Strategy

As covered in our procurement statement we have a tiered pricing strategy. As no locations passed the competition threshold, they were all operated on a fixed price basis in the last year.

Date/Time of Instruction

This is set to 15 minutes ahead of the Start time as our Formal Utilisation Instruction via the Flexible Power API is sent 15 minutes ahead of delivery. It should be noted that for our Secure Service acceptance of availability provides another view of when we will be dispatching, as our default for Secure is once accepted, it will be utilised. This confirmation is provided at 12:00 on the Thursday of the preceding week. The formal Instruction is the sent 15 minutes ahead of real time to confirm the requirement.

Appendix 2: Data and Publications

We acknowledge there is a significant amount of data and information involved in the procurement of our services, as well as wider DSO processes.

As such we have summarised the key references in this section. This reflects the latest documentation, rather than all documentation that was relevant last year.

To provide a live view of please refer to our Document and Data Catalogue.

Distribution Flexibility Services Regulatory Reporting

Publication	Description	Location
Distribution Flexibility Services Procurement Statement	A forward looking report on how we will procure services in the coming regulatory year.	National Grid Website & Flexible Power Website
Distribution Flexibility Services Procurement Report	A report, and supporting data table, detailing how and where we have procured flexibility services in the past regulatory year.	National Grid Website
Ongoing Reporting	We publish the outcomes of our Flexibility Service procurement. This is covered by our Procurement Results document.	Flexible Power Website
Evolution of Distribution Flexibility Service Procurement Document and Webinar	Our initial, informal engagement on the changes we would like to make to how we procure flexibility services.	National Grid Website
Distribution Flexibility Services Procurement Consultation Document, Webinar and Outcomes	Our formal consultation on changes we have proposed on how we procure flexibility services.	National Grid Website
Ofgem Guidance	The Ofgem guidance determining what should be covered in the regulatory reporting.	Ofgem Website

DSO process (and inputs)

Publication	Description	Location
Long Term Development Statement (LTDS)	The Long Term Development Statement provides an overview of the design and operation of the distribution network, together with data on the 132kV, 66kV and 33kV systems and the transformation levels down to 11kV. This is produced by DNO rather than DSO functions.	National Grid Website (registration needed)
Distribution Future Energy Scenarios (DFES)	The Distribution Future Energy Scenarios outline the range of credible futures for the growth of the distribution network out to 2050.	National Grid Website & Connected Data Portal
Network Development Plan (NDP)	The Network Development Plan provide stakeholders with transparency on network constraints and needs for flexibility. The NDP has been created to present the 'best view' of planned asset based and flexible network developments over the five to ten-year period	National Grid Website
Distribution Network Options Assessment (DNOA)	The Distribution Network Options Assessment (DNOA) is a publication which outlines reasons behind investment decisions made in order to deal with constraints on our network.	National Grid Website & Connected Data Portal

Flexibility Requirements

Publication	Description	Location
Network Flexibility Map	The Network Flexibility Map includes the availability windows and expected market volumes required for all our DFES scenarios for a five year period under the Signposting process. Visualisations of the data are available online through the mapping tool and datasets are downloadable. The Network Flexibility Map also presents our firm flexibility requirements which feed into our procurement process. This shorter term view, gives clarity on our needs and is refreshed every six months in line with our procurement timeline.	National Grid Website & Connected Data Portal
Flexible Power Map	The Flexible Power Map replicates much of the functionality of the Network Flexibility Map but focusses on the requirements against which we will procure. It highlights the required volumes and forecast availability windows. This map is held on the Flexible Power website and hosts data from the other DNOs who are also involved in the Flexible Power Collaboration.	Flexible Power Website & Connected Data Portal
Market Gateway	Our portal for all commercial interactions.	Market Gateway
Procurement results	The results documents provides detailed information on the volumes procured through each cycle.	Flexible Power Website
Post Code Checker	A simple look up tool to assess the allocation of postcodes to CMZs. The background data is available as and excel sheet and on the connected data portal.	Flexible Power Website & Connected Data Portal
Service Value Calculator	A tool to provide a view on the maximum potential revenue available to a provider.	Flexible Power Website
Month Ahead Availability Forecasts	Updated ahead of each new month with a forecast of our availability requirements for each operational zone. Active participants can use this to inform their week ahead declarations.	Flexible Power Website
Flexibility Zone Activity Timetable	A spreadsheet detailing which months of the year each zone has a requirement for provider availability	Flexible Power Website

Flexibility Process

Publication	Description	Location
Procurement & Engagement Timetable	We conducts 2 procurement cycles per year. This document provides the proposed procurement window dates and the surrounding market engagement	Flexible Power Website
National Grid Guidance For Electricity Distribution Service Providers	Our Consolidated guidance on how we procure flexibility services	Flexible Power Website
NGED_ENA Standard Flexibility Services Agreement	The latest version of the T&Cs applicable to our Procurement of Flexibility Services	Flexible Power Website

Routes To Participation - Webinar	Slides and Recording on our Webinars on how to participate in our services.	Flexible Power Website
Flexible Power Payment Mechanics	An overview of the Flexible Power Payment Mechanics	Flexible Power Website
Flexible Power Example Event Performance Report	An example of the performance report created post a response event.	Flexible Power Website
Flexible Power Example Monthly Invoice	An example of the monthly invoice created at the end of each month.	Flexible Power Website
Flexible Power Example Event Earnings Report	An example of the payment breakdown of utilisation earnings created post a response event.	Flexible Power Website
Flexible Power Nominated Baseline values	The values used for our nominated baselines	Flexible Power Website

Flexibility Updates

Publication	Description	Location
Flexibility Update Service	A mailing list to receive Updates on our Flexibility Services	Email. Sign up at: https://www.flexiblepower.co.uk/contact

Other relevant information

Topic	Description	Location
Open Networks	An overview of the Open Networks Project and all the relevant documentation.	ENA Website
RDPs	Overviews of the Regional Development Programmes	National Grid ESO website & National Grid website
Innovation	An overview of the National Grid Electricity Distribution innovation portfolio	National Grid Website