



UK Power Networks

Flexibility Service Design
Consultation

Issue date : 14 July 2017

Flexibility Service Design

Consultation

Contents

1	Introduction	3
2	Objectives of the consultation	5
3	About us	6
	3.1 Who is UK Power Networks	6
	3.2 Our vision	6
4	Service requirements	7
5	Service windows and payments	10
6	Service compatibility	13
7	Performance incentives	15
8	Procurement process	17
9	Connections process	20
10	Assessment methodology	22
11	Summary of questions	24

Flexibility Service Design

Consultation

1 Introduction

These are exciting times for the electricity industry. Our power system now has 12 GW of solar generation and 16 GW of wind capacity - sufficient to exceed consumer demand at certain times in summer. The distribution networks are at the forefront of enabling these changes; 90% of the solar energy alone connects directly to the distribution system.

Renewable energy installations, such as wind and solar farms, are on the rise and at UK Power Networks, we are proud to have enabled 8.5 GW of distributed generation to connect to our networks; a third of the UK total.

The pace and scale of change in our industry is increasing. In the last 2 years, grid-scale storage has emerged with advancements in electricity storage technology. At the time of writing, UK Power Networks alone had received close to 16 GW of applications for battery storage with 1 GW of connection offers accepted. At the same time, we are starting to see the pickup of electric vehicles and the national roll out of smart meters.

The electricity system needs to enable these technologies and to do this it has to change.

Role of networks in a changing world

The nation's journey to a low carbon economy is revolutionising the way we produce, distribute and consume electricity. UK Power Networks has experienced these changes first hand. We have seen how our customers, motivated by efficiencies, new technologies, and government policies, can drive radical changes such as the sudden and widespread connection of renewable generation to our networks.

To continue to support the low carbon transition in a safe and cost-effective way our role will continue to evolve. Instead of acting as the passive manager of a network of cables and assets connecting centralised generators to homes and businesses, we need to become a more active manager of a system that enables local communities, renewable generation, small and medium sized businesses, prosumers and consumers to access the energy and flexibility markets, all whilst making sure the lights stay on.

This transition from a passive network manager to one providing active, market-focused services for our customers requires a transformation of our business to meet the requirements of this new role; that of a Distribution System Operator (DSO).

The role of flexibility

As we continue to operate and invest in the network to accommodate the new low carbon world, we will need to use smart, flexible, and innovative techniques to ensure delivery of our outputs, minimise the cost impact on consumers, and manage the uncertainty and complexity of this new world.

At UK Power Networks, we believe that customer flexibility will be central to delivering a smarter, flexible energy system.

Our flexibility programme is looking to utilise response from generators, demand side providers, and electricity storage resources connected to our networks to support efficient

Flexibility Service Design

Consultation

network planning and operations. There can be various applications of flexibility, from facilitating outages to managing demand growth uncertainty on our investment decisions.

Engaging with our customers and stakeholders

At a time of unprecedented change in our industry and in society generally, it is more important than ever that we listen, collaborate and share. Engagement is central to UK Power Networks' business strategy.

It provides us with valuable insights into the thinking, expectations and priorities of all our stakeholders, ranging from customers through to suppliers, from regulators through to the media.

We have put together this consultation to share our preliminary views of how we can implement distribution flexibility in practice. The responses we receive, along with the outcome from other industry consultations, will help inform the design of the service.

Flexibility Service Design

Consultation

2 Objectives of the consultation

The objective of this consultation is to understand the needs and capabilities of flexibility providers as well as to inform our upcoming flexibility tender. We would like to hear views from demand-side response (DSR) providers, generators, storage, aggregators, developers, as well as other interested stakeholders.

The proposals described in this paper are indicative, formed through informal consultation with potential providers, which will change based on industry feedback.

We are consulting to gather stakeholder views on a number of areas to shape the nature of the flexibility contracts we put in place, in particular:

- The design of the payment structures, including the use of availability windows;
- The compatibility with other system services, and the means of avoiding conflicts;
- The use of performance incentives, including the use of baselining;
- The treatment of new service providers, and in particular the interaction with the connections process;
- The timeline of procurement proposed for each tender round, and
- The approach to assessing received tenders.

We have already reviewed the learning from our innovation projects, including Low Carbon London, National Grid balancing services and other industry projects and services such as SSEN's Constrained Managed Zones. Our aim now is to implement a business as usual offering to unlock these benefits. It is likely that our approach will evolve over time based on the experience of running this procurement event and changes in the wider industry.

The goals of our proposed flexibility programme are to:

- Use flexibility to manage uncertainty as to when we invest in network infrastructure;
- Use flexibility where it is more economic than the traditional network solution;
- Procure flexibility efficiently using competitive mechanisms where possible;
- Provide locational signals for new flexibility capacity;
- Support wider adoption of distribution flexibility by demonstrating that it is reliable, safe and secure;
- Facilitate the development of distribution flexibility markets to benefit the system as a whole, and
- Evidence and share learning to inform energy policy and regulation.

Responses to this consultation will be shared with industry, unless they have been marked as confidential. We shall publish a consultation response detailing what has been learnt and our proposals in time for the Invitation to Tender. The findings will also be used to inform wider industry activities through the Energy Networks Association (ENA).

Your views matter and will help shape the type of service UK Power Networks will offer. Please send all your comments to flexibility@ukpowernetworks.co.uk by **04 August 2017**.

Flexibility Service Design

Consultation

3 About us

3.1 Who is UK Power Networks

UK Power Networks provides power to a quarter of the UK’s population via its electricity distribution networks.

UK Power Networks is committed to:

- Maintaining a safe, secure and sustainable power supply to eight million homes and businesses in London, the South East and the East of England;
- Developing what is already Britain’s biggest electricity network – which includes 187,000 kilometres of power lines;
- Strengthening our links with the local communities we serve and building on the skills base of the 5,500 people who work for us across the network including our major bases in Ipswich, Bury St Edmunds, Potters Bar, London, Crawley, Colchester and Maidstone;
- Giving our customers the best possible service and maintaining operational efficiency across our network areas.

3.2 Our vision

At UK Power Networks, we have a clear vision to be the best performing Distribution Network Operator (DNO) in the UK over the 2015 to 2018 period, the first four years of RII0 ED1. We will achieve this by demonstrating industry leadership in the three areas below:



- The safest
- The best employer
- The most reliable
- The best service
- The most innovative
- The most socially responsible
- The lowest cost

...and consistently the best performing DNO 2015 – 2018/9

Flexibility Service Design

Consultation

4 Service requirements

Our flexibility requirement is focused on addressing the demand peaks at specific distribution network locations. The need materialises when there is a network constraint, which is when load exceeds a network limit. When this occurs, we will instruct providers to deliver their contracted flexibility.

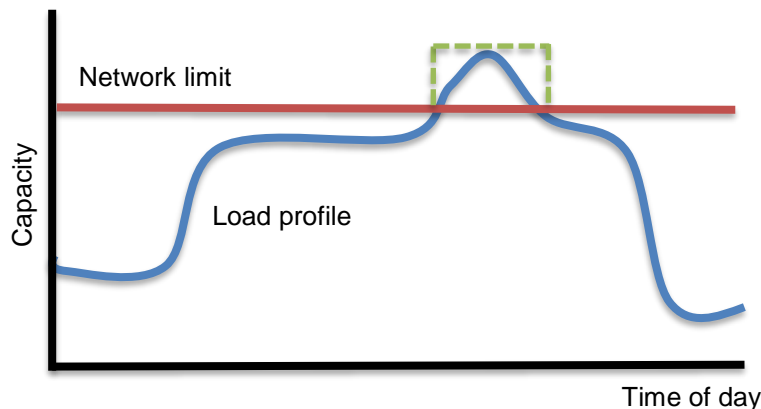


Figure 1: Load profile and flexibility capacity for peak shaving

Why do we need the service?

- We invest in networks to accommodate demand peaks, but future demand growth can be uncertain. Flexibility can help us manage the timing and sizing of our investment decisions.
- Flexibility can help manage load growth before network reinforcement is complete.
- We can use flexibility to secure the network whilst we undertake a planned construction outage.

Who can provide the service?

- **Technology** – We are open to all technology types be it generation, consumption, storage, or a combination of these that can meet our requirement. However, provision will need to be from mature and proven technologies.
- **Locational** - Providers will most likely need to be connected onto the 11 kV network or below and will have to be connected to networks fed from specific network assets. There may be instances where there is a requirement on the higher voltages. Area information will be publicised and provider sites will need to be validated.
- **Participation size** – There are no restrictions on the size of sub-sites of aggregated portfolios, but we believe that the total portfolio size needs to be at least 500 kW. Similarly, direct contracts will be accepted from flexibility connected on the 11 kV network and can offer at least 500 kW. We invite responses specifically on this capacity threshold.

Flexibility Service Design

Consultation

What is being procured?

- **Service windows** – We are targeting peak demand periods predominately in the winter but can also be in the summer. The specific times will depend on the location and application of flexibility, ranging from 2 - 5 hours but longer in some cases. Ideally, participants would be able to deliver energy across the full service window but we note that by allowing providers of shorter durations to participate, it enables access to more flexibility particularly from the demand-side. We invite views on the duration requirements.
- **Capacity requirements** – Requirements vary by location but generally we are looking for single digit MW of flexibility capacity, which may increase in future years. Note that this refers to the additional flexibility capacity and not rated generation or consumption capacity.
- **Response times** – The response from receipt of instruction to full delivery will depend on the network asset, but also how the service is operationally used. It is likely to be from seconds to minutes.
- **Reliability** – The flexibility offered needs to be reliable and consistent. It is our intention to make this a committed service so providers need to be available for the required service windows. The level of reliability will be assessed as part of the performance calculations and service payments.
- **Frequency of dispatch** – We expect that dispatch could be relatively infrequent, and so we assume that an availability-based payment mechanism is appropriate. We consult on the payment mechanism in Section 5.
- **Contract term** – We propose to offer a range of contract terms of up to four years but we invite views specifically on this point. There are benefits to short and long-term contracts to the DSO and providers, but we note in particular that new capacity may need longer-term certainty. National Grid offered four-year contracts to new capacity in their recent Enhanced Frequency Response¹ (EFR) tender.

How are we procuring?

- **Service start** – The 2017 tender will contract for winter 2017-18 start (i.e. from January 2018 but may vary by location), through to summer 2019. Due to the tighter procurement timescales, this year's tender will be more suitable for existing capacity.
- **Tendering** – From 2018 onwards, we propose to run a yearly competitive tender for locational contracts for future seasons, on a pay-as-bid basis. We consult on the procurement approach in Section 8.
- **Duration of market opportunity** – The local flexibility requirement will be either for a fixed period or ongoing, for example a fixed period to cover a planned outage or an ongoing service as an alternative to network reinforcement. We shall indicate the likely duration prior to each tender.

¹ <http://www2.nationalgrid.com/Enhanced-Frequency-Response.aspx>

Flexibility Service Design

Consultation

- 1. What are your views on the proposed 500 kW threshold as the minimum size for directly participating in the tender?**
- 2. What are your views on the duration requirement that providers need to meet? How long can your assets maintain delivery?**
- 3. What contract length options would you like to see offered? Do you think a maximum of four years is suitable, too short, or too long?**

Flexibility Service Design

Consultation

5 Service windows and payments

The contract windows will be set at the procurement stage, defined to cover times of potential need. It is our expectation that utilisation under the flexibility contracts will be infrequent, since this service will typically be used whilst the network is in an abnormal state. However, we are considering other operational modes of use that can increase the frequency of utilisation.

In Table 1, we present the potential impact on parties of availability and utilisation prices. Availability payments should compensate providers for their flexible capacity whilst utilisation payments should cover the energy that has been delivered.

Table 1: Comparison between high and low utilisation and availability prices

		Utilisation Price (£/kWh)	
		Low	High
Availability Price (£/kW/h)	Low	<p>Low availability and utilisation</p> <ul style="list-style-type: none"> • Good for customers, but potentially not for providers. • Low service value could reduce the incentive for service reliability, and increase risks to the network. 	<p>High utilisation and low availability</p> <ul style="list-style-type: none"> • The cost to providers of being utilised is covered, but reliance on utilisation payments may reduce revenue certainty. • If frequency of utilisation is variable, the higher uncertainty could lead to higher service costs to customers. • Higher utilisation costs may act as a disincentive for the DSO to use the service.
	High	<p>High availability and low utilisation</p> <ul style="list-style-type: none"> • Higher revenue certainty for providers. Providers may include a conservative estimate of frequency of utilisation, which could increase availability prices. • Customers will have greater certainty on service costs. • Lower utilisation costs may act as an incentive for the DSO to utilise the service more frequently. 	<p>High utilisation and high availability</p> <ul style="list-style-type: none"> • Good for providers, but potentially not for customers. • High service value should increase the incentive for service reliability.

There are many possible variants on the payment approach, and we invite responses as part of this consultation. In particular, we are aware of three potential options.

Option 1: Tendered Availability price but fixed Utilisation price

Availability payments are paid to all successful participants (on a pay-as-bid basis) whether or not they are utilised, provided they can demonstrate their availability when required. Utilisation is intended to cover the opportunity cost of being utilised, but if fixed by UK Power Networks, the payment may not match the costs perfectly for all participants. The fixed utilisation price can be either set high or low.

This approach allows participants to compete solely on availability, which makes the assessment relatively straightforward and transparent. If participants expect to be over- or

Flexibility Service Design

Consultation

under-compensated for utilisation they can adjust their availability bids accordingly. A fixed utilisation price was used in National Grid's Demand Turn Up² service when first introduced.

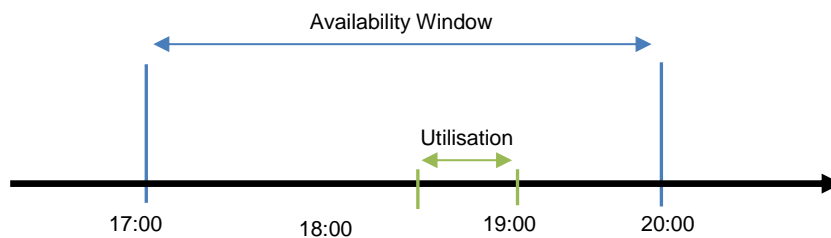


Figure 2: Availability windows and utilisation

The delivery instruction can occur at any time within the availability window. In addition, we may consider issuing delivery instructions outside of this period, but participants would not be obliged to accept these instructions.

Option 2: Availability and Utilisation prices tendered competitively

Rather than fixing the utilisation component up front, we could allow participants to submit a utilisation price alongside the availability price, similar to National Grid's Short Term Operating Reserve³ (STOR) service. This would allow participants to reduce the risk associated with utilisation by ensuring that their opportunity costs were covered, and would allow some participants to offer a high utilisation price in order to minimise expected utilisation, whilst offering a low availability price to remain competitive.

Option 3: Nomination payments in addition to Availability and Utilisation

In operational timescales, we are able to anticipate with greater accuracy when a need for flexibility may materialise. Rather than expecting participants to be ready to respond for the whole availability window, we could consider including a nomination window. Participants would be nominated based on the near-term view of need, and can only be obliged to deliver if they are nominated.

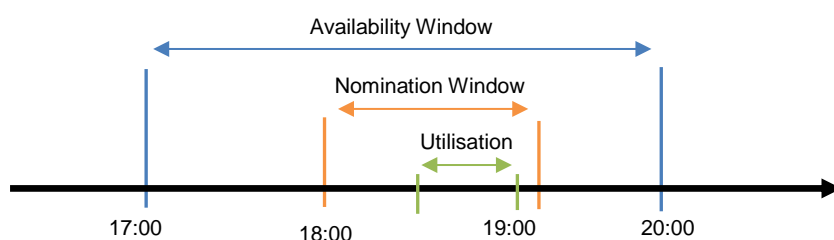


Figure 3: Availability windows, Nomination windows, and utilisation

Nomination instructions can be issued at fixed lead-times before the start of the nomination window. This could be day or week-ahead using load forecasts, or hours-ahead using real-time load to delay the start and to bring forward the end of the window.

² <http://www2.nationalgrid.com/UK/Services/Balancing-services/Reserve-services/Demand-Turn-Up/>

³ <http://www2.nationalgrid.com/uk/services/balancing-services/reserve-services/short-term-operating-reserve/>

Flexibility Service Design

Consultation

This arrangement has at least two potential advantages:

- It minimises the cost (if any) associated with putting an asset into a state of readiness;
- It releases flexibility capacity back to the provider when not needed by the DSO, improving the business case for participants, and reducing the overall cost of delivering the required service.

Nomination could be associated with an additional payment, which would incentivise UK Power Networks to nominate participants only when they are required. The payment would likely be fixed, but could be included in the competitive tender.

Preferred Approach

Our preferred approach is either Option 1 or Option 3 with a fixed nomination fee. We anticipate that the additional complexity of tendering on two or three price parameters simultaneously outweighs its potential benefits, particularly since the expected utilisation could be relatively low.

- 4. Out of the different payment structures discussed, which approach do you prefer? Are there alternative options that you would suggest?**
- 5. Under the proposed payment structure whereby utilisation (and nomination) is fixed, can you suggest at what level these prices should be set?**
- 6. Under Option 3, whereby UK Power Networks will set a Nomination window via a nomination instruction, what notice period would you require?**

Flexibility Service Design

Consultation








6 Service compatibility

Compatibility with other flexibility services would allow providers to access multiple revenue streams. This can help improve the business case for flexibility, increase the volume of flexibility available and therefore reduce costs to the buyers of that flexibility. In the future, new market arrangements are expected to emerge that can offer a more centralised, coordinated and optimised framework under which services can be shared.

Forward contracting is the traditional approach to procurement of system services to ensure availability ahead of need. Securing exclusive rights to that capacity helps increase confidence in service delivery, but it is not necessarily the most efficient way of meeting the whole system’s flexibility requirements. We are looking to find ways of allowing participants to provide multiple services, but we also need to recognise that the potential for conflict is real and needs to be managed.

Table 2 identifies the key synergies and conflicts between a DSO peak shaving service and other national flexibility services including those from National Grid, the GB System Operator (GBSO).

Table 2: Compatibility with other flexibility services

Service	Compatibility	Synergy	Conflict
Triad		Energy direction Not committed contract	Recovery time
Capacity Market		Energy direction	Capacity market penalties Recovery time
Frequency Response		Low-frequency direction Selectable service windows	High-frequency direction Higher value for 24/7 service Operating reserve
Reserve		Energy direction Flexible STOR opt-out	Fixed STOR windows Exclusivity Operating reserve
Demand-turn-up		Tends to be low demand periods	Energy direction Operating Reserve
Energy / imbalance markets		Energy direction Short-term market	Recovery time
Other non-commodity		Energy direction	Recovery time

The main compatibility issues can be broadly categorised into the following types:

- **Concurrent, conflicting** – The GBSO and DSO require services at the same time, and those services conflict. Only one can be delivered at any one time, and doing so imposes costs on the other network/system operator.
- **Concurrent, synergistic** – The GBSO and DSO require services at the same time, but the calling of one service alleviates the need for the other. This is only a technical issue if a network/system operator mistakenly believes it still has the service in reserve. There is also a consideration regarding the payments that a service provider

Flexibility Service Design

Consultation

should receive if called to provide two services concurrently, and ensuring consumers who ultimately pay for the costs are getting value for money.

- **Sequential** – Having delivered one service to a network/system operator, an asset enters a “recovery” phase, during which time it is no longer able to provide the contracted service to the other network/system operator.

Whilst we are open to a range of views on this topic, we identify two possible approaches to dealing with service conflicts.

Option 1: No exclusivity, but the Network Operators over-procure to ensure reliability

Under this model, participants in GBSO services will be able to offer flexibility services to UK Power Networks, and vice versa. If UK Power Networks expects to utilise flexibility infrequently, and utilisation will not always coincide with GBSO utilisation, then the risk of conflict is small. Under this option, service participants would not bear this risk as it would be managed between the Network Operators. These details would need to be developed, but could involve:

- a. UK Power Networks over-procuring flexibility for each constraint to ensure service continuity;
- b. GBSO over-procuring to account for instances in which individual assets are unavailable as a result of a DSO action;
- c. UK Power Networks accessing a third party portfolio to make up for any GBSO service shortfall arising from utilisation.

This would be more complex and costly for the network operators to manage but might encourage more competition and lower prices.

Option 2: UK Power Networks has exclusive rights to flexibility, with participants responsible for managing conflicts

Participants would be obliged to provide the DSO service in the instance in which they are utilised. They could simply pay the GBSO’s non-delivery penalty, and factor this risk into their competitive bids. Alternatively, if they sold their flexibility through a third party aggregator, this aggregator could take on the responsibility of over-sizing its portfolio to ensure GBSO service delivery when potential conflicts occur.

This option provides more certainty to the DSO but might encourage higher costs, pricing in the conflict value.

7. Do you recognise and agree with the synergies and conflicts identified between flexibility services?

8. What are your views on the options we presented to deal with service conflicts? Do you have alternative suggestions?

Flexibility Service Design

Consultation

7 Performance incentives

Performance incentives in a commercial contract have a key role in ensuring that flexibility services are reliably delivered. This is especially important where the service is needed to maintain supplies to customers, avoid damage to assets, and ensure the safety of our employees and the people we serve. When service payments are low, and opportunity costs are high (or the contractual consequences of under delivery are low), then the incentives to deliver the service are weakened. The opposite is also true, where higher payments and costs can strengthen incentives to deliver, but also increases risks to providers.

There are two aspects to consider when designing performance incentives:

1. Baseline – determining the level of service that has been delivered by comparing it against some previously established level of consumption or generation;
2. Pricing – the incentive or charge that should be paid for variations to the agreed service level.

We intend to calculate performance incentives following delivery events and test events, which are dispatch instructions to test performance. Both event types will be used to adjust total service payments.

Baselining approach

There are many variants to how the baseline can be calculated, and it is our understanding that there has yet to emerge a definitive best practice.

Option 1: We follow the approach described in National Grid's Demand Turn Up service:

“The baseline will be calculated using the average demand from the previous four entries for that day and time. For example, if you were instructed for Demand Turn Up on a Wednesday afternoon, the baseline would be calculated using the demand on the previous four Wednesday afternoons. If a Demand Turn Up instruction had also been issued on one of the four baseline Wednesdays, that day would be disregarded and the calculation would go back a week further.”⁴

For UK Power Networks' flexibility service, the determination of successful delivery would be made by reference to the four previous comparable days (within the same time window as the service window).

Option 2: We reference the last ten days under the approach proposed under our Low Carbon London project⁵.

If on one of those comparable days the provider was delivering a GBSO service, or another compatible service, there would be a mechanism to adjust the service level accordingly. In this way, the reference for the flexibility service would be the participant's "normal"

⁴ NGET Demand Turn Up FAQs - <http://www2.nationalgrid.com/UK/Services/Balancing-services/Reserve-services/Demand-Turn-Up/>

⁵ Report A7 - [http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Low-Carbon-London-\(LCL\)/](http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Low-Carbon-London-(LCL)/)

Flexibility Service Design

Consultation

consumption/generation profile. However, we note that making such adjustments could be difficult to administer. We invite suggestions on how this can be implemented.

Pricing approach

If the demand reduction (or generation turn-up) meets or exceeds the agreed volume this would be deemed as successful delivery. Any shortfall would be noted, and used to calculate a performance index across the year. Over-delivery will not result in additional payments.

Under-delivery across the year beyond a threshold, for example 90%, would result in reduced payments. It is our intention that these payments would not exceed the value of the service to the participant, thereby mitigating the downside risk of participating in this service. We believe that under this approach, providers would be incentivised to be conservative in the service volumes they offer to avoid penalty payments from under-delivery, and therefore be more likely to deliver a reliable service.

Possible variants

As described above, there are a range of possible approaches to baselining, and we invite responders to suggest methods that may be more appropriate. Different technologies may require different baselining approaches, and we note that the approach set out may not be ideal for dispatchable units, and batteries in particular. We could for example, use the state of such assets immediately prior to utilisation being called as the baseline.

We also invite views on the incentive structure. We believe that there should be a financial disincentive to non-delivery, but we realise that this imposes some risks on potential participants. In particular, we would like to hear views on payment deductions that exceed the value of the contract to sharpen incentives, or to be reflective of the costs UK Power Networks incur as a result of under-delivery. We could also consider non-financial incentives, such as excluding non-compliant participants from future tender rounds.

- 9. Do you have a particular preference of baselining methodologies? If not, do you think the Demand Turn Up baseline methodology is a suitable approach for your assets?**
- 10. Can you suggest how we can adjust the baseline calculations for “compatible” actions from providers? For example providers that runs for Triad or a GBSO service during the service windows.**
- 11. What are your views on non-delivery incentives as we have described them? At what level should the under-delivery threshold be set?**

Flexibility Service Design

Consultation

8 Procurement process

The procurement process covers how UK Power Networks will communicate service requirements to potential providers, how those providers will supply the required information and bids, and how the results and market information is announced. The key steps in the procurement process will include:

- **Expression of Interest (Eoi)** – announces the locations where we may have a need for flexibility along with indicative requirements including capacity, forecast of future requirements, and general service overview. Providers who have expressed an interest will be requested to respond to the Pre-qualification Questionnaire (PQQ) to indicate their existing capacity, interest in developing new capacity, site locations, technical capabilities, and an indication of costs. The responses will be evaluated to select suitable locations to tender, to pre-qualify providers, and to develop the detailed service requirements.
- **Invitation to Tender (ITT)** – the pre-qualified providers will be issued the ITT which details the scope of the services, locations, requirements, commercial template and contractual terms. Provider sites will need to be validated during this period before bidding into the tender. New flexibility capacity will need to meet additional pre-conditions.
- **Evaluation** – submitted bids will be assessed according to the assessment methodology (Section 10). There will be a tender per location but will take place at the same time. Successful providers will be contracted for the service.
- **Results** – the results of the tender will be announced to all providers who have participated. We may also look to publish a post-tender report summarising the prices offered and accepted.

Frequency of tenders and contract term

Our intention is to run a single tender round each year. For each tender round we shall contract for future seasons, Table 3 shows up to 8 seasons ahead (4 years). To meet the requirement for a future season we will have multiple opportunities to contract. This means we may decide to partially fill our future requirements in the first tender round, to retain the option to accept contracts later on.

The Eoi preceding a tender will publicise new locations with a potential need for flexibility, as well as projections of requirements for existing locations.

For 2017, the timescales are more compressed relative to our proposed future process. We therefore expect that this tender round will be more suitable for existing capacity and hence we propose shorter contract terms.

We do not intend to define how the process will extend beyond the end of RIIO-ED1, March 2023, at this stage.

Flexibility Service Design

Consultation

Table 3: Tender rounds (shown in green) and contract delivery periods available

Tender	Delivery											
	Win 17/18	Smr 18	Win 18/19	Smr 19	Win 19/20	Smr 20	Win 20/21	Smr 21	Win 21/22	Smr 22	Win 22/23	Smr 23
2017	x	x	x	x								
2018		x	x	x	x	x	x	x	x	x		
2019				x	x	x	x	x	x	x	x	x

2017 procurement timeline

The 2017 tender will contract for existing capacity for this coming winter (from Dec or Jan), summer 2018, winter 18/19, and summer 2019 (contracts of up to two years). We invite responses on this proposed timeline.

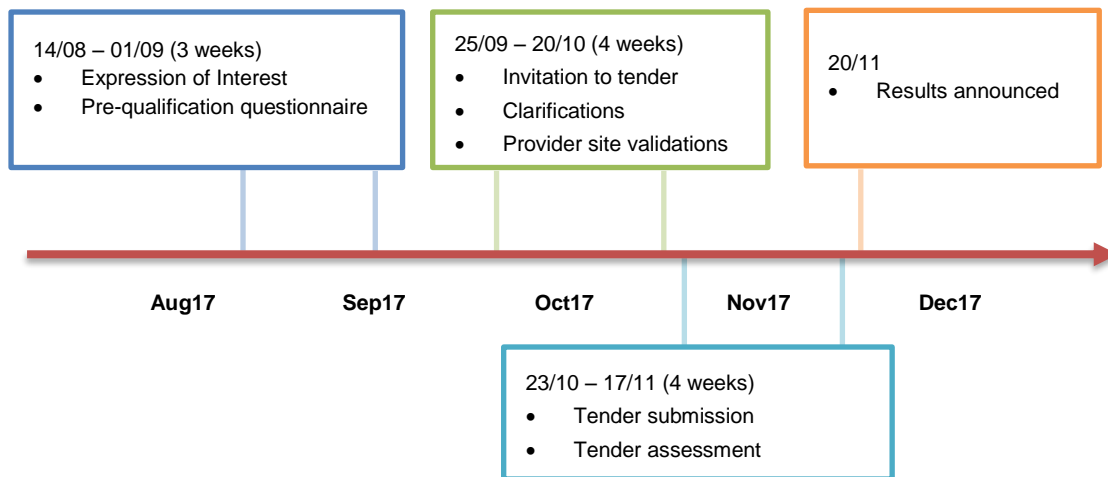


Figure 4: Indicative 2017 procurement timeline

Future procurement timeline

We propose to have future tenders yearly for contracts starting from the front winter. New sources of flexibility are likely to require a longer lead-time between when the location is announced, in the ITT, to when the bids are evaluated. The time depends on the pre-qualification conditions such as requiring a connection offer, which currently can take up to 65 working days from the date of application.

To support compatibility with the capacity market, the release of location information can also be aligned with the timeframes of the capacity market pre-qualification.

We invite suggestions on how the proposed process can be improved. For example, we can pre-register providers throughout the year, which could remove the need for an EoI stage and facilitate more frequent procurement events at shorter lead times. However, providers will still need to meet location specific requirements in order to pre-qualify for each tender.

An online platform for potential providers to register their flexibility potential and submit bids could also improve the process, making it more accessible for providers, and enable shorter-term markets.

Flexibility Service Design

Consultation

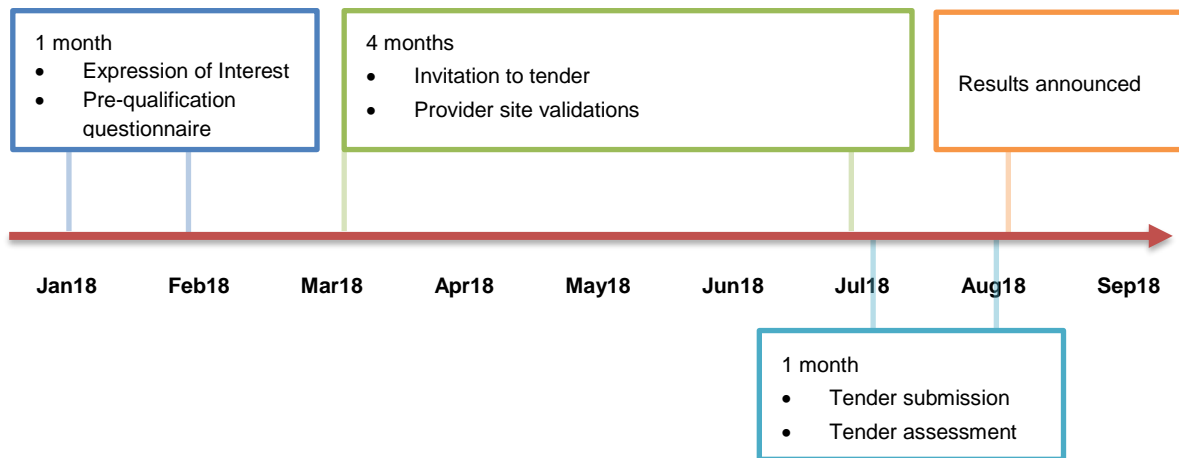


Figure 5: Indicative future procurement timeline

12. Does this year's tender timeline provide sufficient time for providers to offer their existing capacity? Are there any conflicting contractual commitments?
13. What are your views on the proposed future procurement process, and how can it be improved? Can you indicate whether the proposed lead times between the different stages of procurement is suitable for new, as well as existing, capacity?
14. Will an online registration and bidding platform help make the process more efficient and reduce barriers to entry?
15. How can the procurement be scheduled to help align with other flexibility services?
16. What information do you need pre-tender and post-tender to support your bid submissions?

Flexibility Service Design

Consultation

9 Connections process

One of the objectives of the call for services we intend to issue is to signal locations for new flexibility capacity. This could require new or modifications to existing customer connections. The connections process and connection offer can have an impact on the ability for new capacity to provide the flexibility service. We have identified three potential issues:

- **Speculative connection applications** - the publication of locations will provide a signal to site new capacity into constrained areas. Following the announcement of the locations, we could receive a large number of speculative connection applications similar to that experienced under EFR. We are therefore mindful of how we manage the release of locational information.
- **Interactivity** - The allocation of available network capacity is currently on a first-come-first-served basis based on the application date. This ensures fair and equitable treatment of all our connecting customers. Interactive connection offers are those that have a dependency on other connection offers due to insufficient network capacity to accommodate all connection enquiries. Interactive customers form a priority queue for capacity known as an interactivity queue. It could be problematic if a new flexibility customer is successful in the tender but is in an interactivity queue that is impeding them connecting in time.
- **Assets with import capacity** - any connecting assets capable of importing, such as storage assets, in an import constrained area would usually trigger network reinforcement to create additional network capacity. Reinforcement would negate the need for flexibility.

Speculative applications and interactivity

On the issue of speculative applications and interactivity, we propose a number of options:

1. Allow potential participants to tender before they receive a connection offer, and accept the risk that their application is speculative, or that they will not be connected in time to deliver the service.
2. Require assets to have an accepted connection offer before participating in the tender. Such a pre-condition will require providers to commit to the location before knowing the outcome of the tender, but may minimise speculation and the risks associated with interactivity. An interactive connection offer will need a valid acceptance if it is conditional on other connection offers, to be confirmed by UK Power Networks.
3. Similar to the above but require a connection offer only. This provides some understanding of the status of the connection, which mitigates against risks of non-delivery due to interactivity.
4. Modify the connection process to align with participation in the flexibility tender. For example, participants could be promoted in the interactivity queue to ensure that they are able to connect in time to deliver the service. This approach would resolve the issue, but would represent a significant change to the established connection process. It could also be unfair on other customers wanting to connect.

Flexibility Service Design

Consultation

Our minded to approach is option 2 as it offers better safeguards against non-delivery without changes to the connections process. We note that there may be other non-connection pre-conditions that could also help reduce speculation such as the requirements for land rights and planning consent. We invite responses on our minded to position and suggestions on other appropriate pre-qualification conditions.

Assets with import capacity

For storage, and other importing assets, we propose offering flexible connections. This will restrict import at peak times, and depending on the size of the asset, the restricted hours could extend beyond the commercial contract window. Any storage assets that does accept the connection, can apply for an unconstrained connection if new network capacity materialises, subject to the normal connections process.

This arrangement may discourage storage to connect into the area as it restricts the ability to provide frequency response during that period, even if unsuccessful in the tender.

17. Do you agree with the options we have presented to overcome speculation and interactivity, and our minded to position of requiring an accepted connection offer as a pre-condition to tender?

18. What are your views on a flexible connection for storage assets that restricts import at peak times?

Flexibility Service Design

Consultation

10 Assessment methodology

It is expected that initially a single tender round will be run per year for each constrained area. On the basis of this tender, UK Power Networks will undertake a process to identify the least-cost way of meeting its requirement. This process could take the following steps:

1. Carry out contingency analysis to determine the flexibility requirement.
2. Organise the bids in order from low to high availability price to form an availability stack (assumes that utilisation and nomination prices are fixed as discussed in Section 5).
3. Set the procurement target above the flexibility requirement to be the greater of:
 - a. The level required to meet the requirement if a derating factor is applied to all providers
 - b. The level required to meet the requirement if the largest single provider is not available when called
4. Carry out further network studies, using the locations of tendering parties, to ensure the procurement target can be met under all contingencies. This process could result in:
 - a. Rejecting tenders in the middle of the stack in favour of higher-priced tenders if this meets the requirement under the modelled contingencies
 - b. Over-procuring in order to meet the requirement under multiple contingencies
5. The cost of procuring the resulting stack of services is compared against the conventional alternatives and if the tender round proves to be the most economically advantageous option the selected tenders are accepted. An assumption on utilisation/nomination costs will be made to derive the total contract cost.
6. We reserve the right not to accept service volumes up to the full procurement target in order to have the option to procure volume in future tender rounds.

This process is illustrated in the following figure:

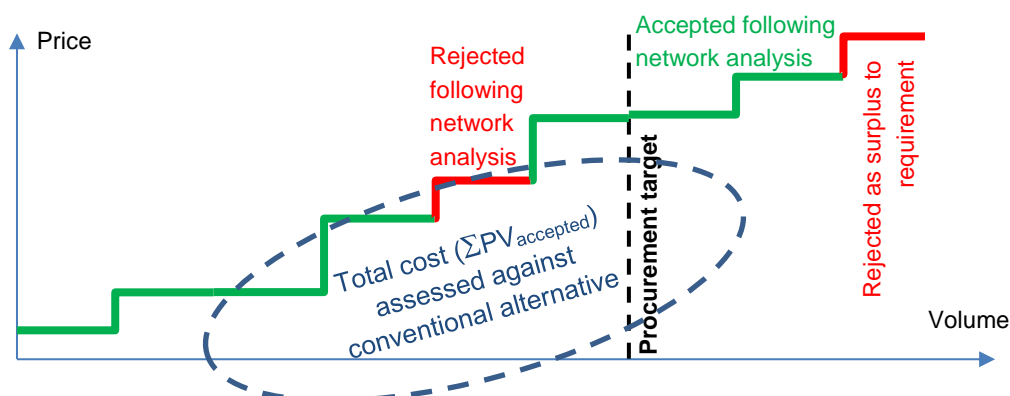


Figure 6: Assessment stack

This approach assumes the response duration capability is a constant parameter across all bids. Where it differs, the assessment will need to optimise across at least three bid parameters - price, capacity, and duration – alongside other potential variables such as

Flexibility Service Design

Consultation

speed of response and length of contract. The procurement target also becomes multi-dimensional including capacity, energy, and time, further complicated by multiple tendering opportunities. We would invite comments and suggestions on this optimisation and the impact it might have on the perceived transparency of the process.

The derating factor is the ratio between the assumed deliverable flexibility capability to the rated or declared flexibility capacity. When applied to the bids, it introduces a level of contractual over-commitment to account for risks of under-delivery. This factor can be either technology specific or generalised. We believe that providers will be incentivised to derate their own offered capacity as under-delivery results in penalty payments. Therefore, any additional over-commitment should be applied generally and not use technology specific deratings. We invite views on this.

The method of assessing the overall cost of tendering against conventional alternatives is in the process of being developed. Where the alternative is network reinforcement, a discounted cash flow methodology will be used to derive an annualised cost of such a solution. The method may also account for the option value of tendering (reflecting uncertainty in both future demand growth and reinforcement plans), and could consider wider societal benefits or costs such as local disruption, losses and wider environmental impacts. The alternative cost could also be other operating costs, such as the potential use of standby generators during network outages.

- 19. Do you think the proposed assessment methodology will deliver cost-effective DSO services, whilst also being fair and transparent for participants?**
- 20. What other considerations should we bear in mind when comparing between tenders, and between tendering and conventional options (e.g. capability, reliability, carbon impacts)?**

Flexibility Service Design

Consultation

11 Summary of questions

1	What are your views on the proposed 500 kW threshold as the minimum size for directly participating in the tender?
2	What are your views on the duration requirement that providers need to meet? How long can your assets maintain delivery?
3	What contract length options would you like to see offered? Do you think a maximum of four years is suitable, too short, or too long?
4	Out of the different payment structures discussed, which approach do you prefer? Are there alternative options that you would suggest?
5	Under the proposed payment structure whereby utilisation (and nomination) is fixed, can you suggest at what level these prices should be set?
6	Under Option 3, whereby UK Power Networks will set a Nomination window via a nomination instruction, what notice period would you require?
7	Do you recognise and agree with the synergies and conflicts identified between flexibility services?
8	What are your views on the options we presented to deal with service conflicts? Do you have alternative suggestions?
9	Do you have a particular preference of baselining methodologies? If not, do you think the Demand Turn Up baseline methodology is a suitable approach for your assets?
10	Can you suggest how we can adjust the baseline calculations for “compatible” actions from providers? For example providers that runs for Triad or a GBSO service during the service windows.
11	What are your views on non-delivery penalties as we have described them? At what level should the under-delivery incentives be set?
12	Does this year’s tender timeline provide sufficient time for providers to offer their existing capacity? Are there any conflicting contractual commitments?
13	What are your views on the proposed future procurement process, and how can it be improved? Can you indicate whether the proposed lead times between the different stages of procurement is suitable for new, as well as existing, capacity?
14	Will an online registration and bidding platform help make the process more efficient and reduce barriers to entry?
15	How can the procurement be scheduled to help align with other flexibility services?
16	What information do you need pre-tender and post-tender to support your bid submissions?

Flexibility Service Design

Consultation

17	Do you agree with the options we have presented to overcome speculation and interactivity, and our minded to position of requiring an accepted connection offer as a pre-condition to tender?
18	What are your views on a flexible connection for storage assets that restricts import at peak times?
19	Do you think the proposed assessment methodology will deliver cost-effective DSO services, whilst also being fair and transparent for participants?
20	What other considerations should we bear in mind when comparing between tenders, and between tendering and conventional options (e.g. capability, reliability, carbon impacts)?