

Delivering customer flexibility

Our investment appraisal processes

December 2019

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1. PURPOSE OF THIS DOCUMENT

Electricity distribution networks are critical enablers for decarbonisation. We are already adapting to enable a smart, flexible, carbon-free energy system while continuing to deliver a safe, reliable and affordable service to the eight million people in our region. We set out our latest thinking on this transition in our DSO v1.1 Distribution System Operator Development plan¹ published in October 2019. In order to provide clarity and transparency we committed to provide more information on how our investment appraisal processes are embedding the use of contracted customer flexibility into our standard business as usual operations. The publication of this document is an initial step to providing greater visibility.

This document is intended to provide useful and relevant information for our stakeholders. A key part of our Distribution System Operator (DSO) transition is making decisions on when to use customer flexibility as an alternative to network solutions on a level playing field basis. We are seeking to build trust with our stakeholders through providing this information.

We expect to provide further detail in 2020 – either a greater level of detail or changes that reflect the processes developing through time. We expect changes as processes are operated for the first time and we work to improve them based on our experience or the learning and standardisation taking place in the cross-industry collaboration with our peer Distribution Network Operators (DNOs).

Our transition to the role of DSO remains a key stakeholder engagement priority for Northern Powergrid. We would value any views on the information we are releasing here. Please make contact in any way that suits. You may contact us directly through the flexibility mailbox – flexibility@northernpowergrid.com.

2. CURRENT CUSTOMER FLEXIBILITY USE CASES

Contracted customer flexibility is a solution that electricity networks can use in order to either keep the lights on as an alternative to using network investment or temporary generation. It involves reaching agreement with customers that may then be paid for providing a service to the network. This benefits all customers when this cost of running the network offsets the need to invest in network assets or other temporary solutions.

Currently, industry recognises three use cases, as shown in Figure 1.

Traditional Reinforcement	To defer spending on network reinforcement to create new capacity
Planned Maintenance	To manage the risk of power cuts during long duration construction periods
Emergency Support	To provide emergency support during unplanned power cuts

Figure 1: Current use cases for contracted customer flexibility

¹ Our DSO v1.1 Development plan is available from: www.northernpowergrid.com/DSO

Scaling up and standardisation of contracted customer flexibility is still relatively new and the market is still emerging. DNOs are working together to help support this market to grow and are collaborating with sellers and other buyers of flexibility such as National Grid Electricity System Operator to facilitate the growth of markets. Much of this collaboration is taking place through the Energy Networks Association (ENA) Open Networks project². Through this route we are sharing best practice, developing new methods and seeking standardisation of approaches to enhance whole system efficiency and ease of participation for customers.

3. OUR COMMITMENT TO DEPLOYING CUSTOMER FLEXIBILITY

We are committed to helping build a flexibility market that works for all users of the network, providing confidence to the market that every decision is made on the basis of sound judgement.

In line with this commitment, we contributed and committed to the ENA's 'Six steps for delivering flexibility services'³. These steps outline our drive for consistency across network businesses to build an efficient flexibility marketplace. We expect these steps will provide confidence to our stakeholders that the adoption of new commercial services is being correctly delivered.

In addition, in Autumn 2019, we made specific commitments in our DSO v1.1 development plan to deliver on the six steps, as shown in Figure 2.

² www.energynetworks.org/electricity/futures/open-networks-project/open-networks-project-overview/

³ Available from:

www.energynetworks.org/assets/files/ENA%20Flexibility%20Commitment%20Our%20Six%20Steps%20for%20Delivering%20Flexibility%20Services.pdf

Champion a level playing field	<p>As a minimum, we pledge to deliver against each of these six commitments as we continue the roll-out of our customer flexibility plan. Building on the high-level commitments we made in DSO v1.0, we are delivering as follows:</p> <ul style="list-style-type: none"> — Update and publish, by the end of 2019, our investment appraisal processes to embed customer flexibility into business as usual and bring clarity of roles within our teams. This process will include segregation of key decisions that could be perceived as a conflict of interest. This process will reinforce a culture of transparency and inform our stakeholders on how we allow fair competition between network and commercial market solutions to address network needs. We will be inviting an independent third party to review these processes. — We are designing new metrics to give maximum visibility on the investment appraisal processes. This will not only include the outcomes of our investment decisions but also the working we use to arrive at those decisions. We will start publishing these reports in the first quarter of 2020. This will provide network users with the confidence that the investment processes are being operated in good faith. — Working collaboratively with other industry partners and policy makers we are seeking whole energy system approaches that drive convergence in approach to the introduction of flexibility services. An example of this approach is the Open Networks programme where DNOs are working together to share best practice and deploy consistency across all aspects of the development of flexibility services. — We will widen the scope of network data that we publish. We will shift from a bilateral dialogue with local authorities, local enterprise partnerships and other organisations representative of all major energy sectors, including heat and transport, to a data-sharing platform, with a view to facilitate access and stimulate debate, so that the most accurate information is captured in our network requirements. — We will aim for all potential service providers to have an equal chance of participation in customer flexibility markets.
Ensure visibility and accessibility	
Conduct procurement in an open and transparent manner	
Provide clarity on the dispatch of services	
Provide regular, consistent and transparent reporting	
Work together towards whole energy system outcomes	

Figure 2: Our implementation of the ENA’s six steps for delivering flexibility services (p. 17, DSO v1.1)

This document is the first release of information on our processes.

In this document we are setting out principles that apply to all three of the current use cases for flexibility. Our approach is to meet our commitment to introduce flexibility wherever there is a need.

Since making our commitment there has been no new need for significant investment for capacity. In December 2018 we launched an expression of interest for the Reinforcement Deferral use case in parallel to a detailed assessment of need in nine network locations. The detailed assessment of need indicated that there was no intervention required (of any kind). As such we have not proceeded to formal market tender for customer flexibility for this use case. We are therefore continuing to scan for opportunities to deploy customer flexibility for the use case of Reinforcement Deferral. Similarly, we are also seeking opportunities for the Planned Maintenance use case.

The use case that is being fully market tested at this time is that of Emergency Support. In this document, we go on to give more specific detail of how this is being deployed. This is the subject of a live market tender exercise.

We expect to provide more information in 2020 as we deploy more customer flexibility.

We are developing and deploying our internal processes in combination with looking for market opportunities. We will invite a third party to assess our processes and then release further details on these with new documents to be published in 2020. New metrics are being introduced in order to identify the use of these processes in our business as usual activity.

Considering that the market for customer flexibility is still emerging and practices not fully standardised across the network operators this means that our investment appraisal processes are likely to evolve as the market matures. We will seek to improve our processes and the ongoing work from industry to align progresses will necessitate changes (particularly in Open Networks Workstream 1a – flexibility services). This will require us to add to, or revisit some of these processes published here.

Assessing our network's needs and making the right decision to deliver the most effective and efficient outcome for our customers is a central part of our role as a network operator.

The neutrality of these decisions, and their performance in terms of cost and technical viability, relies on checks and balances defined by a series of processes.

There are three decision points:

1. Selecting a type of solution to solve a network need through a process that creates a level playing field, including through financial valuation;
2. Procuring from customer 'Asset A' or customer 'Asset B' in an open and transparent manner, to secure flexibility availability;
3. Dispatching 'Asset A' or 'Asset B' at the time of operation.

4. ROLES AND RESPONSIBILITIES - ORGANISATIONAL DESIGN

Northern Powergrid's current organisational structure keeps the DSO and DNO functions integrated. The responsibility to plan and deliver on the transition to DSO is the responsibility across various directorates, albeit under the supervision and guidance of a central change programme management team.

Figure 3 shows an extract of the company's organisational chart showing the reporting lines for the various areas of DSO-related activity and the teams involved in driving the delivery of customer flexibility services.

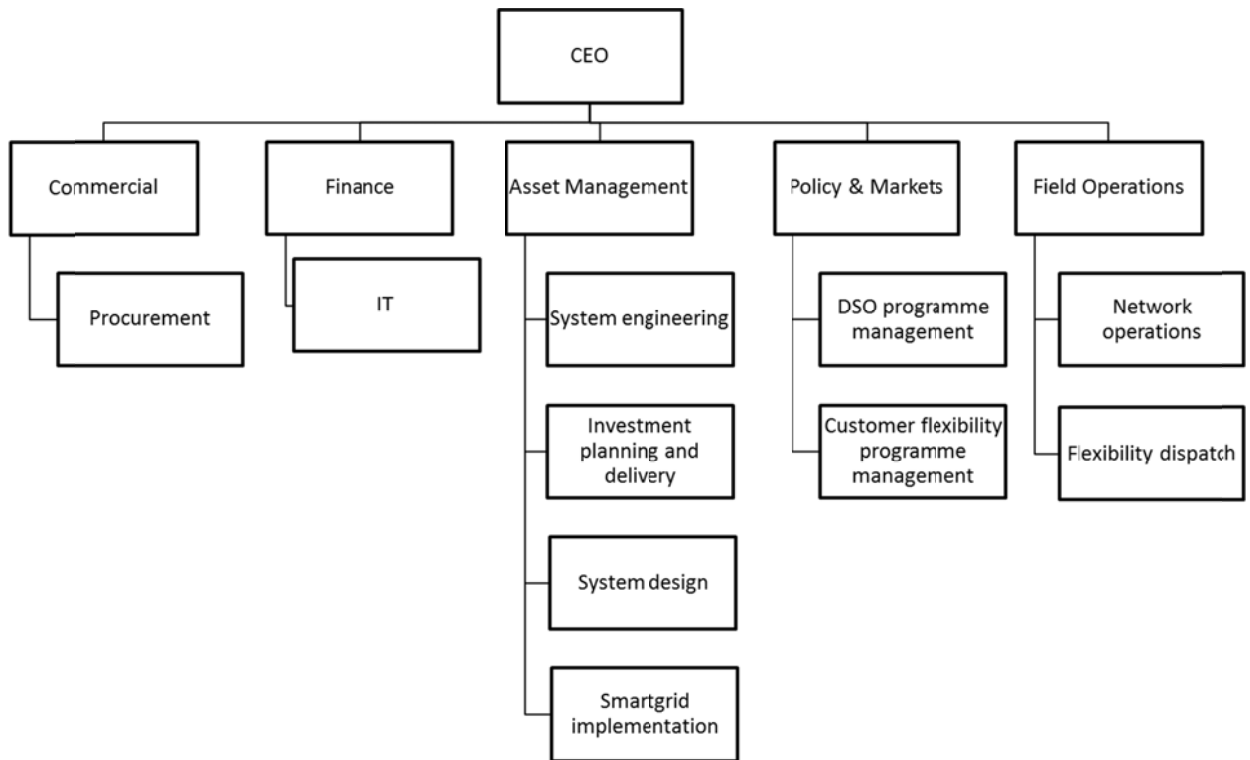


Figure 3: Reporting lines of the teams delivering customer flexibility services

In summary:

- The guidance on how to develop networks economically, including through the use of flexibility, and the identification and analysis of constraints sits within Asset Management;
- The assessment of investment options and recommendations is an allocated responsibility to different functions in Policy & Markets, Asset Management and Field Operations (dependent on the use case being procured);
- The procurement of flexibility is the responsibility of Policy and Markets; and
- Triggering the use of customer flexibility sits with Field Operations.

5. SEPARATION OF DUTIES TO ENSURE A LEVEL PLAYING FIELD FOR CUSTOMER FLEXIBILITY

There has been significant stakeholder interest in ensuring that customer flexibility is able to compete on a level playing field with technical network solutions. As we describe in p.16 of DSO v1.1, the RIIO regulatory regime incentivises us to find lower-cost ways of meeting the required outputs. These incentives to share savings between the network company and the customer have served us well and there is every reason to expect that they will work effectively to promote the use of flexible market solutions as opposed to network solutions. However, we also recognise that we need to change working-level processes to reinforce these company-level incentives. This not only helps to reinforce the new culture change in our organisation but also builds trust with our stakeholders that we are indeed using a level playing field.

We have been focussing on the processes and team roles for decision making required for all flexibility use cases. These are being included in the codes of practice that are under development for use when a need arises. However we include below the summary information so that stakeholders may see the direction of our thinking.

Figure 4 sets out the draft process by which a customer or network solution is selected. Table 1 then sets out how the decisions may be taken at each step of the process.

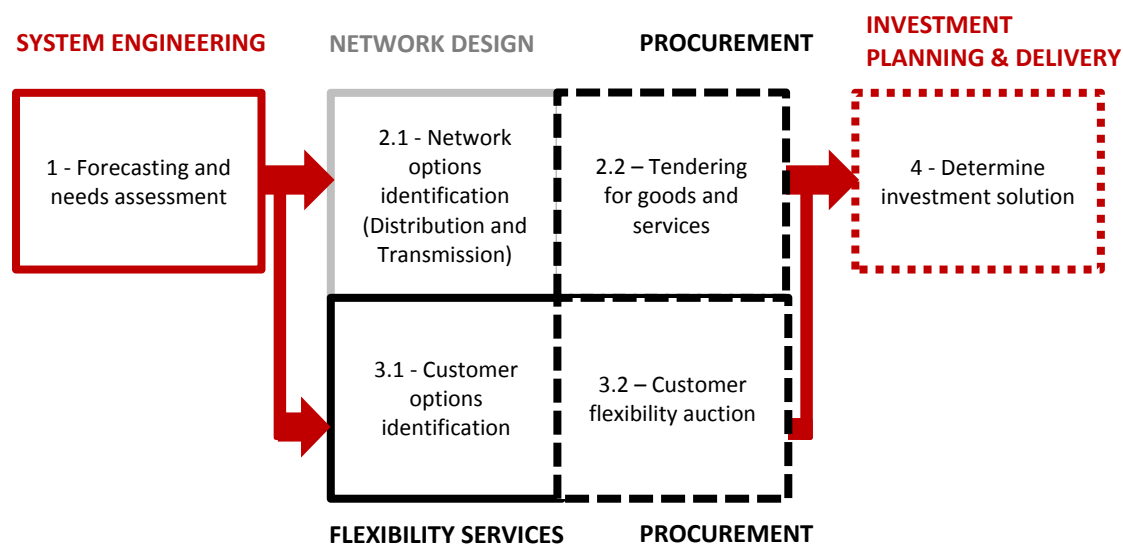


Figure 4: Investment appraisal decision making processes

Process step	Business functions and directorate	Description of process step
1 - Forecasting and needs assessment	System Engineering, Asset Management	Evaluate forecast scenarios for future loading and determine the potential customer and network solutions if any intervention is required
2.1 - Network options identification (Distribution and Transmission)	Network design functions, Asset Management	Explore and cost the potential network solutions - this includes evaluation of transmission options in addition to distribution
2.2 – Tendering for goods and services	Procurement, Commercial	Establish prices and contracts to provide network equipment and services
3.1 - Customer options identification	Flexibility Services, Policy & Markets	Explore the customer flexibility solutions, design tender, engage the market and report on potential non-network solution
3.2 – Customer flexibility auction	Procurement, Commercial	Fair and compliant market test process for customer flexibility
4 - Determine investment solution	Investment Planning & Delivery, Asset Management	Run the governance and project approval process: i.e. finalise the decision document that compares all options according to set assessment methodology, and provides transparent recommendations for investment approval

Table 1: Draft definition of roles for deploying customer flexibility

As set out above, it is important to note that these are emerging processes that have not yet been fully utilised end to end. However, they have proved useful in developing our thinking in parallel to scanning for opportunities to deploy flexibility.

The key aspects that ensure a level playing field are:

- **Customer advocacy** – the major external-facing part of our business (Policy & Markets) is responsible for ensuring that we are actively seeking out customer flexibility and evaluating it appropriately. There is separation internally from the Asset Management function that has traditionally been focussed on network solutions.
- **Fair competition** – the involvement of Procurement means that flexibility is viewed as a commodity in the same way that another service or equipment supply contract is viewed. As such, this ensures we set out what we need before approaching the market and ensure probity in the manner in which bids are assessed. In common with our other purchasing activity, we are currently operating our e-auction platform to host competitive and compliant procurement process.
- **Decisions for needs, solutions identification and chosen investment are clearly specified** – senior manager accountability clear for establishing network needs (step 1), seeking solutions to complete (steps 2 and 3) and processing the decision (step 4). This means that clear and auditable decisions are made in each part of the process. The reason for network or customer solutions being chosen may be determined and metrics used to highlight throughput of decisions.

6. PROCESSES FOR EMERGENCY SUPPORT

As explained in section 3 of this document, Emergency Support is the use case for customer flexibility that is being deployed since it is the area of current need. The processes for this use case have therefore been progressed and shared now in order to support its use and accompany the current market tender exercise.

The process for Emergency Support is described in Figure 5.

Further information on the market tender is available from www.northernpowergrid.com/DSO

Example scenario – “Assume that both infeeds to the substation have been lost and that restoration could take up to two weeks.”

Under this situation we require the entire customer demand to be supplied over that time frame by a mixture of:

- a. Intrinsic network capacity;
- b. Transfer capability;
- c. Existing distributed generation; and
- d. Existing demand side response schemes.

Thought needs to be given to identify the level of network resilience required.

The parallel path focuses primarily on establishing the minimum level of security but there may be scenarios where we want to achieve a higher level.

For example the planning standard allows for a proportion of customers to be left “offline” during the restoration of supplies – although acceptable from a planning perspective consideration needs to be given to the impact a two week rota disconnection programme would have on our customers.

When assessing the relevant drivers we should consider the key internal business drivers of Customer Service, Operational Excellence and Employee Commitment.

Engineering Recommendation P2 (Security of Supply) [EREC P2] prescribes the standard to which a group demand should be secured (i.e. the absolute minimum levels allowed).

It details the factors that should be taken into consideration to establish the magnitude of the group demand that needs to be secured and also the means of securing that demand using a combination of network assets and non-network assets.

Whilst EREC P2 does not detail how we should meet the standard, guidance is set out on the means of achieving the prescribed security of supply in Engineering Report 130 (guidance on the application of Engineering Recommendation P2) [EREP 130].

Using the tools and systems available within the business it is also possible to establish the existing levels of security of supply including (but not exclusively):

Construction and seasonal capability including incoming 132/EHV circuits and associated plant (**Intrinsic network capacity**);

EHV & HV interconnection (where available) allowing demand to be transferred to the alternate feeder if possible (**Transfer capability**);

Capacity of **existing distributed generation** using Engineering Report 131 (Analysis package for assessing generation security capability) [EREP 131]; and

Any existing **Demand Side Response** schemes.

Existing demand profiles should be examined for the highest loaded assessed time period (for example two weeks) in each month of the year (or of interest), looking at SCADA data in PL.

The gross demand profile will be used to identify the underlying demand, including that masked by generation that is normally running during the analysis period, the reason for this being to ensure that we do not assume that all generation will be back up and running as soon as supplies are restored via the interconnector.

Finally thought should be given for any future security of supply requirements by considering any contracted but not yet connected demand customers and the future load growth (for example by using the DFES).

For further guidance refer to:

1. Engineering Recommendation P2 (Security of Supply) Issue 7 2019;
2. Engineering Report 130 - Guidance on the application of EREC P2;
3. Engineering Report 131 - Analysis package for assessing generation security capability; and
4. IMP/001/206 - Guidance for assessing Security of Supply in accordance with Engineering Recommendation P2.

The MSR gross demand required to be picked up is the total demand profile less the demand transferred out of the group.

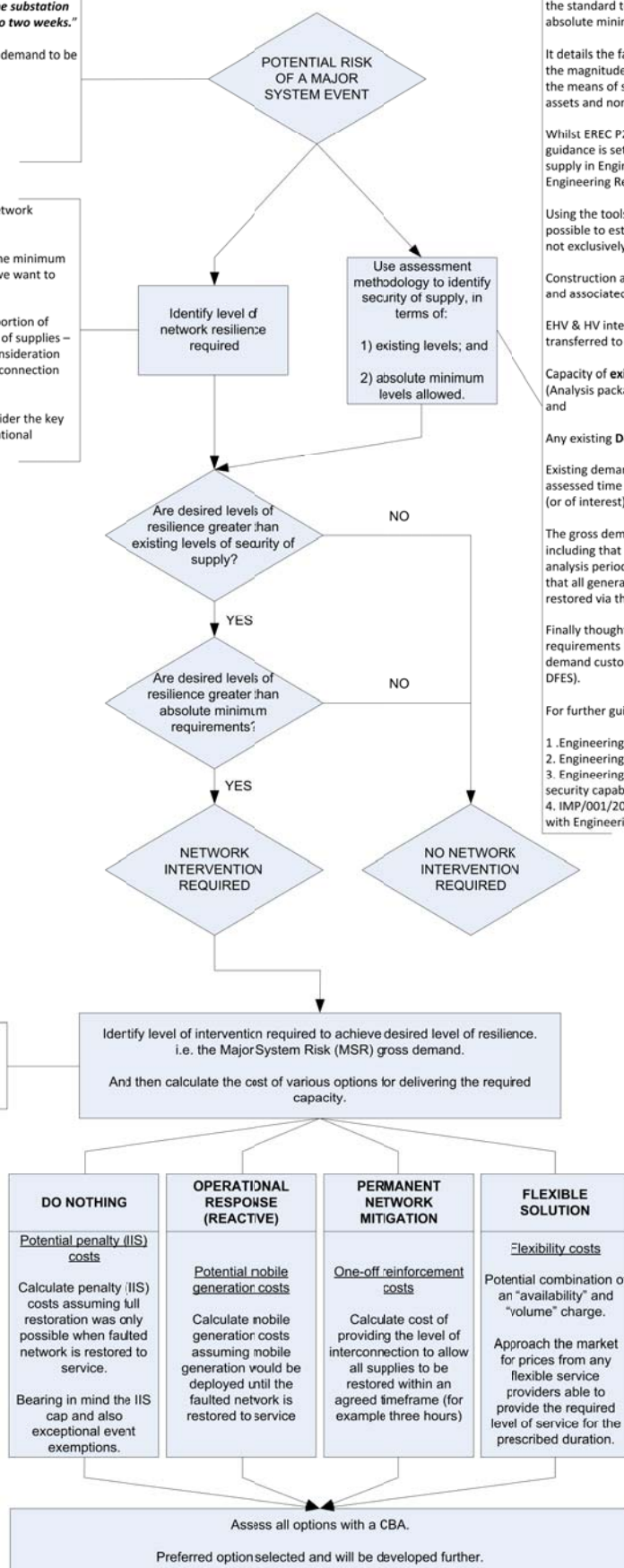


Figure 5: Process to consider flexibility for Emergency Support use case

7. NEXT STEPS

The development and documentation of our processes is taking place as we seek further opportunities to deploy customer flexibility. Our immediate priorities are to:

- Conclude the production of codes of practice for assessing customer flexibility options alongside network solutions for the Reinforcement Deferral and Planned Maintenance use cases and deploy as the need arises.
- Proceed with independent third party assessment of our investment appraisal processes.
- Develop our methods for valuing flexibility to include the option value of deferring reinforcement and also consider how the social and environmental value may be appropriately represented.
- Publish initial metrics on the use of these processes in our business as usual activity.
- Publish further information following the independent assessment.

We'd like to hear from you

The email to use: flexibility@northernpowergrid.com

The webpage to visit: www.northernpowergrid.com/DSO