Delivering Customer Flexibility

Quarterly Metrics – Q4 2020

January 2021

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 have set out our ethos of 'flexibility first' on this transition in our DSO v1.1 Distribution System Operator Development plan[1] and in the Emerging Thinking[2] section of our business plan for 2023 to 2028.

Since the publication of DSO v1.1, we have provided more information on how our investment appraisal processes are embedding the use of contracted customer flexibility into our standard business as usual operations[3] where there is a cost-benefit for customers.

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 committed to create clarity and transparency on our flexibility assessment processes.

This document is intended to provide visibility on the number of schemes that qualify as a use case for customer contracted flexibility and on which we are making investment decisions. Through the provision of this information, we are seeking to create transparency and build trust with our stakeholders that we are making the right investment decisions on behalf of our customers.

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

[1] DSO v1.1 Development plan, October 2019: www.northernpowergrid.com/DSO

[2] https://engage.northernpowergrid.com/planning-for-2023-28/welcome/

[3] Delivering customer flexibility, December 2019: www.northernpowergrid.com/asset/0/document/5261.pdf

HELP WITH UNDERSTANDING THE METRICS TABLE

Please read the following as a guide to Table 1.

- The units of the metrics shared in Table 1 are number of sites or location.
- The table is structured according to 3 sequential steps: A, B and C that vary slightly according to the flexibility use case, and are explained in the diagram shown in Figure 1.
- The three columns used in Table 1 refer to the three flexibility Use Cases, which are linked to the four products defined by the Open Networks Project[4] as shown in the table below:

Standard Use Case	**Aim**	**Typical Standard Flexibility Products**
1 Load-driven reinforcement	To defer significant spending on network reinforcement by using flexibility services to create new capacity	Secure Sustain
2 Construction risk management	To manage the risk level associated with construction during planned maintenance to meet Engineering recommendation EREC P2	Dynamic
3 Emergency support	To provide emergency support during unplanned power cuts arising from high risk, low probability events (Major System Risk events)	Restore

- This excludes reinforcement schemes that are driven by a new connection request, as the regulatory framework to support it is yet to be defined.

[4] A common definition of the four real power products was developed and agreed through the Open Networks project and this can be found here: www.energynetworks.org/assets/files/ON-WS1A-Product%20Definitions%20Updated-PUBLISHED.pdf

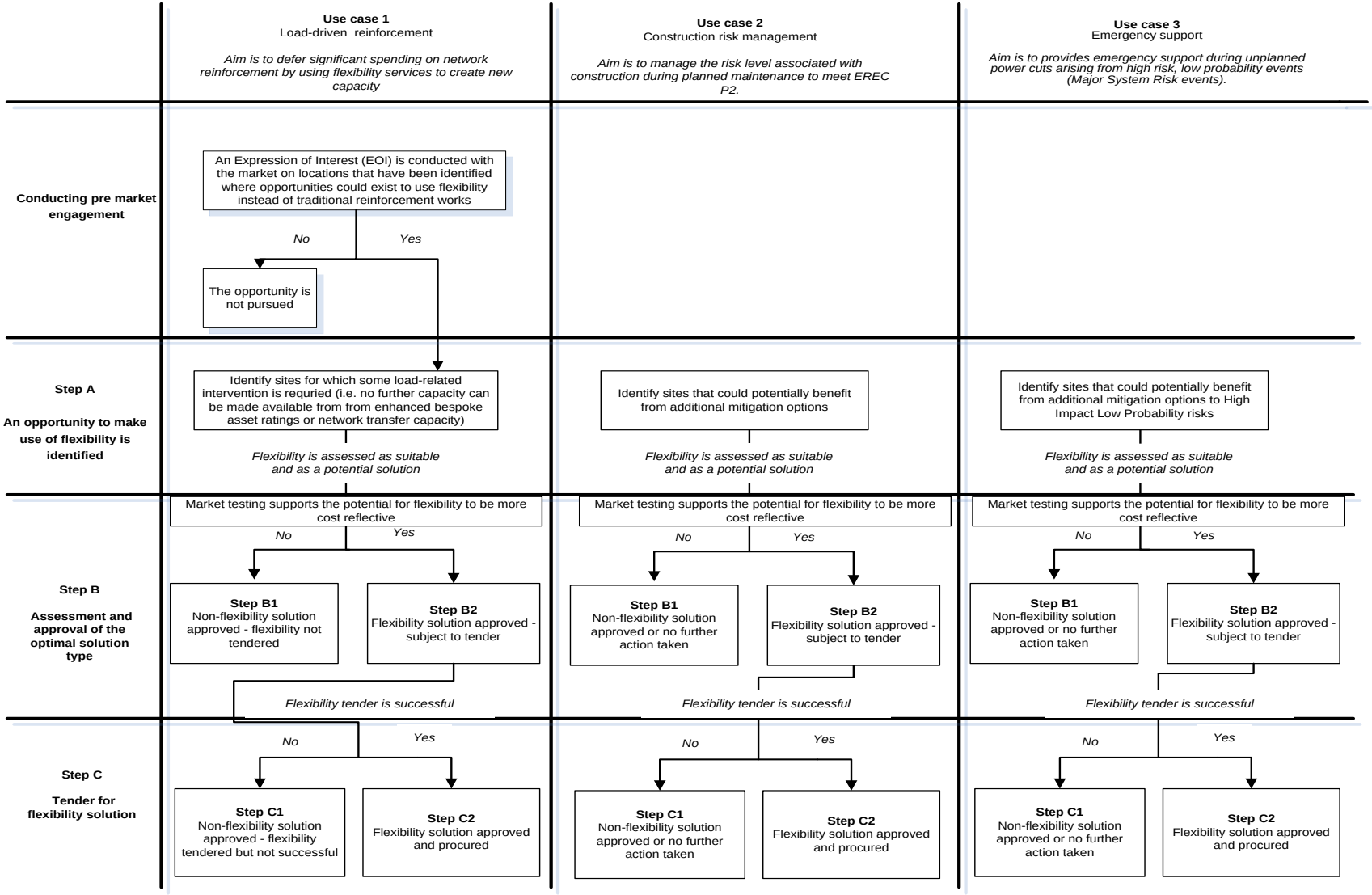

Figure 1: Simplified decision tree for investment appraisal process

QUARTERLY METRICS OF OUR FLEXIBILITY APPRAISAL INVESTMENT PROCESSES

	Load-driven Reinforcement			Construction Risk Management			Emergency Support		
	2019	2020	Note	2019	2020	Note	2019	2020	Note
Conducting pre market engagement									
Expression of interest conducted (A site has been identifed where future upgrade work may be required)	0	15	1						
Step A: Identification of a need for flexibility									
Intervention requirements confirmed (An opportunity for flexibility as an alternative solution has been identified)	0	1	2	0	1	3	7	0	4
Step B: Assessment and authorisation of the solution									
B1: Network solution authorised - flexibility not tendered (Other mitigating factors made flexibility an unsuitable option)	0	0		0	1		0	0	
B2: Flexibility solution authorised - subject to tender (Flexibility was assessed as the optimal solution in the CBA)	0	0		0	0		7	0	
Step C: Tender for flexibility									
C1: Network Solution authorised - flexibility tendered but not successful (Either insufficient interest to meet requirement or flexibility costs too high)	0	0		0	0		7	0	
C2: Flexibility solution authorised and procured	0	0		0	0		0	0	

Table 1: Number of schemes that qualify as a use case for customer contracted flexibility and on which we are making investment decisions, shown by year in which the scheme was identified.

ADDITIONAL INFORMATION ON THE METRICS

The metrics commence in 2019 and therefore omit the activity that commenced in 2018 where we ran an Expression of Interest for nine sites ahead of confirming the requirement for investment for use case 1. The process was successful in recording significant interest to provide us with a service, but did not process to the next phase as further analysis found that no intervention was required at these sites at this stage. This is described further in our DSO v1.0 and DSO v1.1 documents.

Use Case 1: Load-driven reinforcement

Note	
1	- In Q4 2020, we reached out to our customers with an expression of interest for providing flexibility at 15 EHV substations that were identified as having the potential to require action to address constraints during the 2020s. The customer responses were from both LV and HV voltage levels. We had six LV aggregator customers express an interest and eight HV customers with the majority of these not suitable due to not meeting the necessary requirements for flexibility at their associated substations. It is worth noting, that as part of this process we attempted to address the contracting at Wheatacre Rd again (see note 2 below), using flexibility rather than capital investment, and found no current or anticipated flexibility that could meet the requirement of 4MW. This site will continue to be under assessment in the future. - Further to this, as part of our work on identifying potential future customers who can provide flexibility we have also identified a further eight customers (either connected or who have applied to connect) who have the potential to provide flexibility in future. We are continuing engagement with customers in Q1 2021 to understand the availability of flexibility resources for the EHV substations identified in this expression of interest and the potential for flexibility to operate at other EHV areas and the LV network more widely. The Northern Powergrid Distribution Future Energy Scenarios (DFES) 2020 report and network studies will continue to identify any new locations where network constraint issues may arise in the 2020s or longer term and be resolved by flexibility solutions.
2	- In 2018/19 we conducted an Expression of Interest on a substation at Wheatacre Rd to address a load constraint. The requirement was for an extra circa 4MW, however no flexibility in the area could provide the necessary 4MW therefore this was not progressed and a network solution was recommended.

Use Case 2: Construction risk management

Note	
3	- In Q2 2020 the site of the St Andrew Rd substation was identified for a short

	construction outage planned for August 2020, which came with a low risk of failure that flexibility may help mitigate against. Following analysis of probability of failure during the outage, and impact of such a failure (penalties) – which considers the time taken to return to service in the event of a fault – it was concluded that the overall risk was sufficiently low to be acceptable. The likely costs for procuring flexibility would be greater than the counterfactual risk value.

Use Case 3: Emergency support

4	- In Q4 2019, seven sites were selected as highest priority and as potentially benefiting from additional mitigation options to High Impact Low Probability risks and a procurement event opened in November 2019. The substations were: St Andrew's Rd, Staygate, Wold Newton, Featherstone, Greatham, Denwick and Guisborough. The ensuing e-auction ran in Q1 2020 did not attract bids, leading our operational team to take no action for now, but to resort to normal restoration solutions should one of these low probability events occur. The seven sites appear in steps A, B2 and C1 2019. This e-auction has taught us that the flexibility market is unlikely, in the near future, to offer solution to Use Case 3 if procured on its own since there is insufficient value to attract bids.