

Part 1: Launching DSO v1.0 – our next steps

1. Our customer flexibility plan

Our strategy is to work with our customers to deliver what they need, provide them with extra value from their energy assets and manage the network in the most cost-efficient manner. This means exploring different options to meet the increasingly complex demands on the network. In particular, using customer flexibility to benefit the energy system where this makes sense compared to the other network intervention options. In the long term, we want to foster a deep and liquid market for flexibility. In this section of the document we are setting out the short-term action we are taking to work towards that goal through tendering and contracting for flexibility.

We are committed to openly test the market for flexibility solutions as alternatives to reinforcing our network.

In this phase 1, we will do this for projects that would involve significant cost to solve with conventional network investment, but we will also market test flexibility solutions for less costly projects where we believe there are viable options. Over time, as technology develops and our capability grows, we aim to assess flexibility as an alternative to all network investment.

Starting in 2018, we are setting out where we have forecast need for additional capacity in response to changing customer energy use, assessing the flexible capacity connected to our network and how these assets could respond to requests from us to adjust their usage. We are not specifying the source of this flexibility. However, we expect it could include commercial generation and domestic solar panels; batteries and electric vehicles, that can import or export energy; and customers with the ability to reduce the amount of energy they are taking from the network.



Product definition

Flexible assets can help us maintain network stability in a number of ways. The services that are of interest to us include procuring flexibility for the three use cases shown in Figure 2.

We are interested in hearing from providers who can offer flexibility services with assets that meet our minimum requirements¹. We will use this information to evaluate the feasibility of flexibility procurement at each location.

The initial expression of interest (EOI) is seeking flexibility for 2019-20 at certain locations. However, we are interested in hearing from flexibility providers located across our entire network as they may be able to provide services that we will need in the future.

Figure 2: Cases for use of customer flexibility

Traditional reinforcement	To defer spending on traditional reinforcement.
Planned maintenance	To manage the risk of power cuts during long duration construction periods.
Emergency support	To provide emergency support during unplanned powercuts.

¹ Information on how this can be done is available on our website at: www.northernpowergrid.com/DSO

Figure 3: Flexibility locations for phase 1 roll-out



- Minimum requirements**
- ✓ For a site to provide flexibility it must be located in the relevant position on the network – this includes voltage level and geographic location. Table 1 contains further information on these locations.
 - ✓ The asset should be able to reliably adjust its demand import (against a predetermined baseline) or generation export safely and manage this for the duration of a contracted window.

- ✓ Each site must have minute-by-minute metering.
- ✓ Should the site provide the service, this must not trigger the participant to breach any other contractual agreement the site may have in place e.g. increasing connection agreement.
- ✓ Minimum size of flexibility available must be 100kW (note this is flexible capability not site capacity). If assets are being bid in as an aggregated portfolio, the minimum portfolio size should be 200kW.

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Flexibility requirements

We use scenario analysis to identify the range of potential capacity requirements for the network in the forthcoming years. It is these projections that are informing the assessments of sites that will require some form of intervention – either a customer solution (procuring flexibility) or a network solution (load transfers or reinforcement). We are seeking expressions of interest for customer flexibility so that the solutions may compete to arrive at the optimal outcome for our customers.

Figure 3 and Table 1 identify the areas where we are interested in finding out what assets may be able to provide us with flexibility in the short term, from October 2019. We are looking for customers in the specified post codes that may either reduce their demand or increase their generation to reduce the peak load on our network by up to the maximum power stated.

Figure 4: Scenario based modelling informing our load-related investment plan

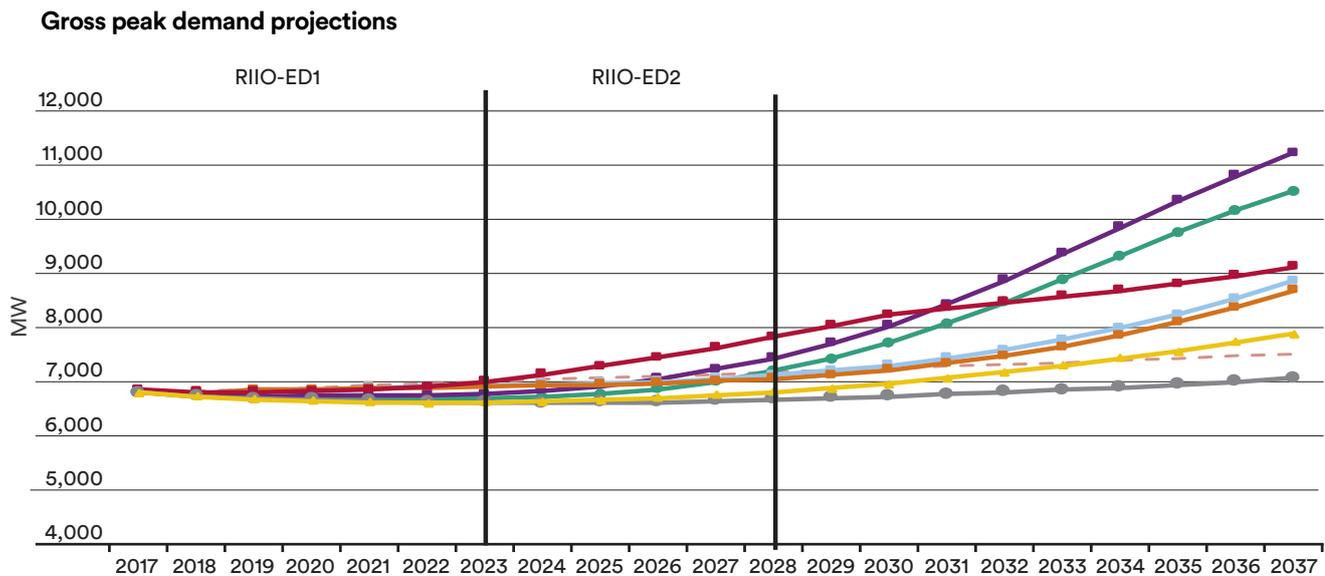


Table 1 : Winter 2019 customer flexibility expression of interest

Voltage	Postal sector	Location	Substation	Maximum requirement (MW)	Requirement		
					Months	Days	Hours
HV	S66, S369, S364, S363, S362, S361, S357, S350, S305	Sheffield	Wheatacre Road	0.5	Dec–Mar	Sun–Fri	17:00 to 18:30
	YO254, YO253, YO250, YO178, YO140, YO124	Bridlington	Butterwick	0.5	Dec	Mon–Fri	17:00 to 20:00
	NE298, NE270, NE264, NE263, NE262, NE261, NE259, NE258, NE250	Newcastle	Monkseaton	2.5	Nov–Dec	Mon–Fri	16:30 to 20:00
	YO88, DN149, DN148, DN140	Goole	Pollington	0.5	Oct–Mar	Mon–Fri	11:00 to 14:00
	DN159, DN158, DN156	Scunthorpe	Foxhills	2.5	Jan–Dec	Mon–Fri	07:00 to 17:30
	HU129, HU128	Hull	Ellifoot Lane	2.5	Oct–Mar	Mon–Sun	01:00 to 22:30
	WF179, WF178, WF177, WF175, WF170, WF169, WF167, WF160, WF158, WF157, WF156, WF140, WF134, LS270, BD49, BD46, BD40, BD195, BD194, BD112, BD111	Dewsbury	Heckmondwike	0.5	Dec–Feb	Mon–Fri	16:00 to 18:00
	YO329, YO324, YO323, YO322, YO319, YO318, YO307, YO306	York	Haxby Road	1	Dec–Mar	Sun–Fri	17:00 to 19:00
	HD59, HD58, HD50, HD22, HD16, HD15, HD14, HD13, HD12, HD11	Huddersfield	St Andrews Road	0.5	Dec	Mon–Fri	09:00 to 19:00
HV/EHV			1.5	Jan	Mon–Fri	09:00 to 17:00	

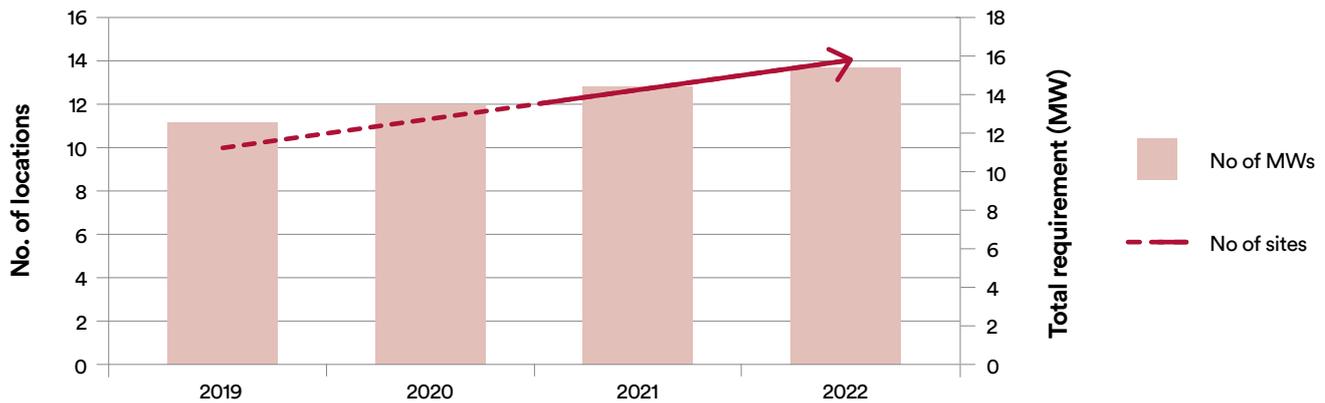
We estimate that our requirement for procuring flexibility will grow over the next few years. We expect this growth as a result of a number of factors including the uptake of electric vehicles, increased deployment in renewables and changing consumer behaviour.

As this growth continues (Figure 5), we expect to be procuring more flexibility across a greater number of locations.

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Figure 5: Expected growth in peak congestion solutions



Our estimate is that, from 2023 to 2030, the number of locations where we may look to implement measures to prevent a substation exceeding its capacity could increase by up to three times the requirement we had for the ED1 period (2015 to 2023). In each case, we will assess the

potential for flexibility procurement into our appraisal strategy. It will be assessed alongside making better use of existing network infrastructure and enhancing the infrastructure with a view to establishing the most economic solution.



2019-2023

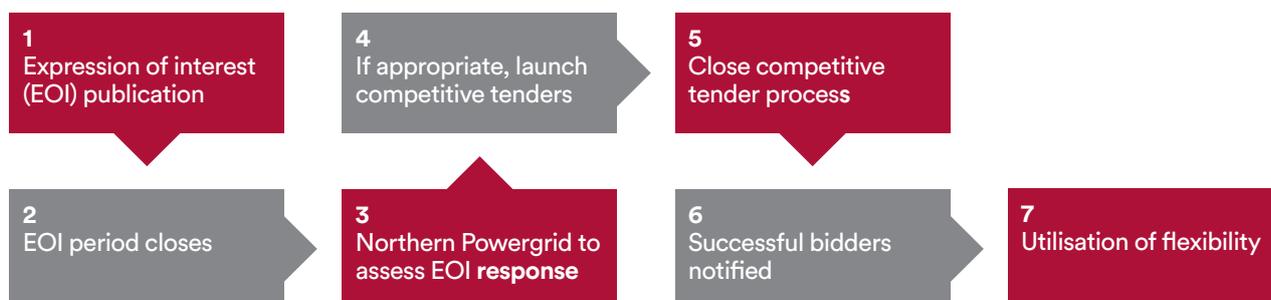
Capacity required for flexibility up to 14 sites, 16MW



2023-30

Capacity required for up to ca. 40MW

Next steps



Northern Powergrid will assess the responses received from asset operators and evaluate these against network requirements.

1 At identified locations, if appropriate, we will invite relevant providers to participate in the next stage.

2 We will then carry out a competitive tendering process and contract with successful participants to provide us with flexibility.

3 We will procure flexibility as required.

4 We will call for expression of interest to provide flexibility for 2020-2021.

How to respond

This publication gives a high-level outline of our requirements for asset operators and aggregators looking to participate in providing flexibility services in the winter of 2019-2020. They should express their interest by completing our questionnaire by 25 February 2019.

We would also encourage operators to complete the questionnaire if they are unable to provide services at this time but believe they can provide them in the future.

You can access the questionnaire online from: www.northernpowergrid.com/DSO