

# Demand Side Flexibility

Routes to Market Review – Stage 1: industry engagement on barriers  
May 2024

# Context & Objective

## Demand side flexibility context

Demand side flexibility has a fundamental role to play in delivering improved outcomes for consumers from Net Zero and in delivering a zero carbon, secure, low cost electricity system. We believe that all demand that is capable of being flexible, should be encouraged and rewarded for being flexible, whether through supplier or aggregator propositions. We want to enable all low carbon flexibility to move seamlessly between markets, driven by effective signals, delivering whole electricity system value.

Demand side flexibility from households has been emerging over recent years through the adoption of smart meters, electric vehicles and other Consumer Energy Resources (CER) such as batteries and smart heat pumps. Markets such as the Demand Flexibility Service (DFS) and Distribution System Operator (DSO) flexibility markets, as well as retail time of use tariffs, have started to reward consumers for being flexible.

Communities and businesses have also started to gain value from flexible assets and behaviours, driven by electrification of heating, transport and businesses processes, and the adoption of generation and storage solutions.

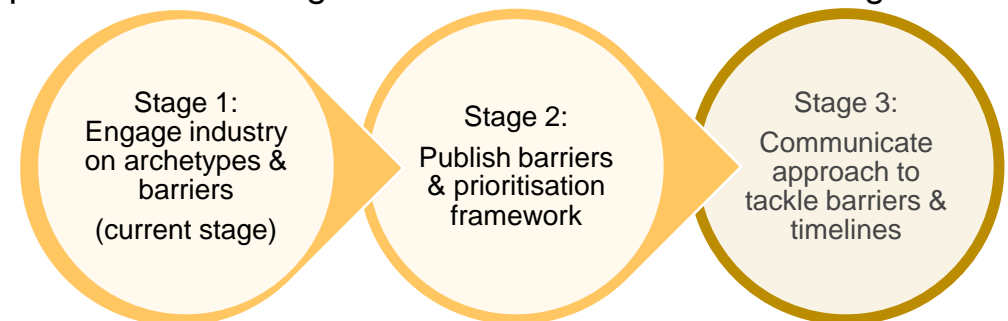
## Routes to market review objective

The ESO flexibility market strategy aims to support the evolution of demand side flexibility by focusing on unlocking routes to market for flexibility service providers, helping to incubate and encourage the emerging supply chain for demand side flexibility.

We believe that demand side flexibility has a key role to play in operating a fully decarbonised electricity system which is reliable, affordable and fair, but that demand side flexibility is currently underrepresented across our services due to market rules, policy and regulatory barriers.

This routes to market review for demand side flexibility is a part of the Flexibility Market Strategy workstream 2, to identify and remove barriers and pain points for flexibility across ESO services and markets.

This review aims to identify and prioritise barriers, and set out our approach to removing barriers and timeframes for doing so.



# Approach & Scope

## Approach

### **Stage 1: Engage industry on archetypes & barriers(current stage)**

Work with industry to gain a common understanding of the current characteristics and capabilities of demand side flexibility and the barriers that are preventing demand side flexibility from participating in our markets.

### **Stage 2: Publish barriers & prioritisation framework**

Publish the list of barriers across demand side flexibility archetypes and our approach to prioritisation of barriers.

### **Stage 3: Communicate approach to tackle barriers & timelines**

By the end of 2024, communicate how we will tackle barriers and our timelines for doing so.

## Scope

### Demand Side Flexibility Archetypes

We have developed a set of 33 high level demand side flexibility archetypes for this routes to market review with the aim of capturing all current demand side flexibility categories. The archetypes are somewhat generalised, and assumptions often include a range of capabilities, based on our current understanding.

**Please refer to “ESO Routes to Market Review for Demand Side Flexibility - Stage 1 Archetypes final” for the full list of archetypes.**

Archetype variables:

- Consumers: Domestic, Industrial & Commercial
- Demand side flexible technologies & assets
- Route to market providers: Suppliers, Virtual Lead Parties(VLP), non VLP aggregators

### ESO Services

This review focuses on current and planned ESO services for frequency, within-day flexibility and thermal constraints.

This including Static FFR, Dynamic Containment, Dynamic Regulation, Dynamic Moderation, STOR, Fast Reserve, Quick Reserve, Slow Reserve, Balancing Reserve, Local Constraint Market, Demand Flexibility Service & Balancing Mechanism.

**Please refer to “ESO Routes to Market Review for Demand Side Flexibility - Stage 1 ESO Service Requirements final” for the key service requirements.**

# Barriers, Prioritisation & How to Respond

## Barriers:

This routes to market review focuses specifically on barriers preventing demand side flexibility from participating in our services. We have classified barriers as technical, commercial or regulatory barriers.

Barriers are defined as unnecessary or overly restrictive rules or requirements that block flexibility from participating in services. This review focuses on the barriers that industry believe are blocking access to our services. Perceived barriers are sometimes necessary service requirements to meet system needs, and we aim to clarify any uncertainty through this review.

**Please refer to “ESO Routes to Market Review for Demand Side Flexibility - Stage 1 Barriers Matrix final” for the full barriers matrix.**

## Prioritisation

As part of this review, we are developing a prioritisation framework to enable us to prioritise the most impactful barriers to focus on initially. Our proposed key prioritisation criteria will focus on removing barriers that:

- Can reduce balancing costs over the next 5 years
- Provide a valuable route to market for demand side flexibility
- Enable a level playing field and inclusive markets
- Have lower time, cost and complexity to resolve

## How to respond

At this stage of the Routes to Market Review we aim to engage with industry to gain a common understanding of:

- the current characteristics and capabilities of demand side flexibility,
- the barriers that are preventing demand side flexibility from participating in our markets.

This summary document should be read alongside the following documents:

- ESO Routes to Market Review for Demand Side Flexibility - Stage 1 Archetypes final
- ESO Routes to Market Review for Demand Side Flexibility - Stage 1 ESO Service Requirements final
- ESO Routes to Market Review for Demand Side Flexibility - Stage 1 Barriers Matrix final

Please complete the questionnaire by Friday the 28th June 2024.

We also welcome 1 to 1 discussions during this period, so please reach out to the team at [flexibilitystrategy@nationalgrideso.com](mailto:flexibilitystrategy@nationalgrideso.com)

# Questionnaire

Please provide feedback based on the following questions using [this link](#).



## Archetypes

- 1 Do you believe we are capturing a sufficient level of information in the archetypes?
- 2 Are there any categories of assumptions missing?
- 3 Do you have any more specific information you can provide in relation to specific archetypes and assumptions? e.g. updated or inaccurate assumptions, new or revised archetype suggestions etc

## Barriers

- 4 Do you agree with our initially captured barriers?
- 5 Do you have additional barriers you would like to add in relation to specific archetypes?
- 6 Do you agree with our daft RAG assessment of service accessibility?

## Prioritisation

- 7 Do you have any recommendations on the criteria we should use to prioritise barriers or feedback on our proposed key criteria?

We intend to use the information provided to update our archetypes, assumptions and barriers. We do not intend to publish any information about specific respondents. Please mark any information that you are providing that needs to remain confidential as such(e.g. commercially confidential information).

# Current ESO activity enabling routes to market

## Ongoing activities

There are already a number of activities ongoing across the ESO to remove barriers for demand side flexibility:

**Power Responsive**: Power Responsive is a stakeholder-led programme, facilitated by the ESO, to stimulate increased participation in the different forms of flexible technology such as Demand Side Response (DSR) and storage. This review will help inform the Power Responsive roadmap and prioritised deliverables.

**300MW of small-scale assets in the Balancing Mechanism**: We have relaxed metering standards ( $\pm 2.5\%$  accuracy, 60-second metering reads) to enable up to 300MW of small scale aggregated assets to participate in the Balancing Mechanism.

**Operational Metering Review**: The Power Responsive working group is commissioning an independent review of our operational metering requirements for the Balancing Mechanism, to inform what the appropriate requirements should be going forwards to enable increased participation.

**Demand Flexibility Service evolution**: The Demand Flexibility Service (DFS) was launched in 2022 to enable new demand side flexibility to help ESO mitigate security of supply risks. The team is currently engaging with industry to understand what DFS could look like moving forward.

**Local Constraints Market**: The Local Constraint Market (LCM) is enabling us to access new sources of flexibility to help manage one of our most constrained boundaries. The Local Constraint Market is enabling demand side flexibility to participate through low barriers to entry such as having no minimum aggregated unit size for participation and supporting smart metering.

**Thermal Constraints Collaboration Project**: This project is enabling the ESO and industry to work together to find solutions for thermal constraints, which can be implemented and deliver results in the short term.

**CrowdFlex**: CrowdFlex will enable ESO's Control Room to better understand and utilise domestic flexibility as a resource in future. As well as the models, data from the trials will also be used to generate consumer understanding and help develop go-to-market strategies for flexibility service providers.

# Demand side flexibility archetype barriers matrix summary

A summary of the routes to market review for demand side flexibility barriers matrix is presented below. This represents our current understanding of the accessibility of relevant ESO services for demand side flexibility archetypes.

Demand Side Flexibility Archetypes			Static Fast Frequency Response	Dynamic Containment	Dynamic Moderation	Dynamic Regulation	STOR	Fast Reserve	Quick Reserve	Slow Reserve	Balancing Reserve	Local Constraint Market	Demand Flexibility Service	Balancing Mechanism	
Consumer	Route to market provider	Flexible asset type													
Domestic	Supplier	Behavioral	●	●	●	●	●	●	●	●	●	●	●	●	
		EV	●	●	●	●	●	●	●	●	●	●	●	●	
		Battery & Solar	●	●	●	●	●	●	●	●	●	●	●	●	
	Independent VLP Aggregator	Behavioral	●	●	●	●	●	●	●	●	●	●	●	●	
		EV	●	●	●	●	●	●	●	●	●	●	●	●	
		Battery & Solar	●	●	●	●	●	●	●	●	●	●	●	●	
	Non VLP Aggregator	Behavioral	●	●	●	●	●	●	●	●	●	●	●	●	
		EV	●	●	●	●	●	●	●	●	●	●	●	●	
		Battery & Solar	●	●	●	●	●	●	●	●	●	●	●	●	
	Industrial & commercial	Supplier	Fleet EV	●	●	●	●	●	●	●	●	●	●	●	●
			Large consumer scheduled flex	●	●	●	●	●	●	●	●	●	●	●	●
			Large consumer interruptible flex	●	●	●	●	●	●	●	●	●	●	●	●
Small & medium enterprise scheduled flex			●	●	●	●	●	●	●	●	●	●	●	●	
Small & medium enterprise interruptible flex			●	●	●	●	●	●	●	●	●	●	●	●	
"Behind the meter" Battery, Solar &/or Wind			●	●	●	●	●	●	●	●	●	●	●	●	
District heating			●	●	●	●	●	●	●	●	●	●	●	●	
Independent VLP Aggregator		Fleet EV	●	●	●	●	●	●	●	●	●	●	●	●	
		Large consumer scheduled flex	●	●	●	●	●	●	●	●	●	●	●	●	
		Large consumer interruptible flex	●	●	●	●	●	●	●	●	●	●	●	●	
		Small & medium enterprise scheduled flex	●	●	●	●	●	●	●	●	●	●	●	●	
		Small & medium enterprise interruptible flex	●	●	●	●	●	●	●	●	●	●	●	●	
		"Behind the meter" Battery, Solar &/or Wind	●	●	●	●	●	●	●	●	●	●	●	●	
		District heating	●	●	●	●	●	●	●	●	●	●	●	●	
Non VLP Aggregator		Fleet FV	●	●	●	●	●	●	●	●	●	●	●	●	
		Large consumer scheduled flex	●	●	●	●	●	●	●	●	●	●	●	●	
		Large consumer interruptible flex	●	●	●	●	●	●	●	●	●	●	●	●	
		Small & medium enterprise scheduled flex	●	●	●	●	●	●	●	●	●	●	●	●	
		Small & medium enterprise interruptible flex	●	●	●	●	●	●	●	●	●	●	●	●	
		"Behind the meter" Battery, Solar &/or Wind	●	●	●	●	●	●	●	●	●	●	●	●	
		District heating	●	●	●	●	●	●	●	●	●	●	●	●	

**Key:**

- Not aware of any insurmountable barriers
- Barriers are likely blocking some of the market
- Barriers are stopping all of the market
- Not capable of participating in service

# Current service summary

A summary of the key known service barriers is presented below. This represents our current understanding of the key perceived barriers across relevant ESO services for demand side flexibility. The full list of perceived barriers across archetypes can be found in the **ESO Routes to Market Review for Demand Side Flexibility - Stage 1 Barriers Matrix final** document.

ESO Services		Static FFR	Dynamic Containment	Dynamic Moderation	Dynamic Regulation	STOR	Fast Reserve	Quick Reserve	Slow Reserve	Balancing Reserve	Local Constraint Market	DFS	Balancing Mechanism	Across Services
Key Barriers	Metering	• 1 second performance metering & 1% accuracy	• 20 HZ performance metering	• 20 HZ performance metering	• 20 HZ performance metering		• Operational metering (1 second, 1%, 5 second latency)	• Operational metering (1 second, 1%, 5 second latency)	• Operational metering (1 second, 1%, 5 second latency)	• Operational metering (1 second, 1%, 5 second latency)	• Half hourly boundary meter data for non-suppliers	• Half hourly boundary meter data for non-suppliers	• Operational metering	• Measuring Instruments Regulations (MIR) for asset meters
	Bidding, dispatch & response	• EFA blocks • 30 seconds response time	• 0.5 seconds initiation time	• 0.5 seconds initiation time	• 2 seconds initiation time	• Commitment windows *30 seconds response • 3 MW in GSP group min capacity	• 25 MW min capacity • 2 minute ramp to full delivery	• 1 minute ramp to full delivery		• Designed for BM units only		• Stacking rules		• ESO contractual terms
	Baselines		• 1 second to full delivery	• Operational baseline	• 10 second to full delivery	• Zero baseline								• Cross service baselining complexity
	Settlement		• Operational baseline		• Operational baseline		• Half Hourly Settlement requirement for meters	• Half Hourly Settlement requirement for meters	• Half Hourly Settlement requirement for meters	• Half Hourly Settlement requirement for meters	• Half Hourly Settlement required for asset meters • Double charging for non-supplier consumers (lack of compensation)	• Half Hourly Settlement requirement for asset meters	• Half Hourly Settlement requirement for meters • No compensation for non-supplier demand turn up	