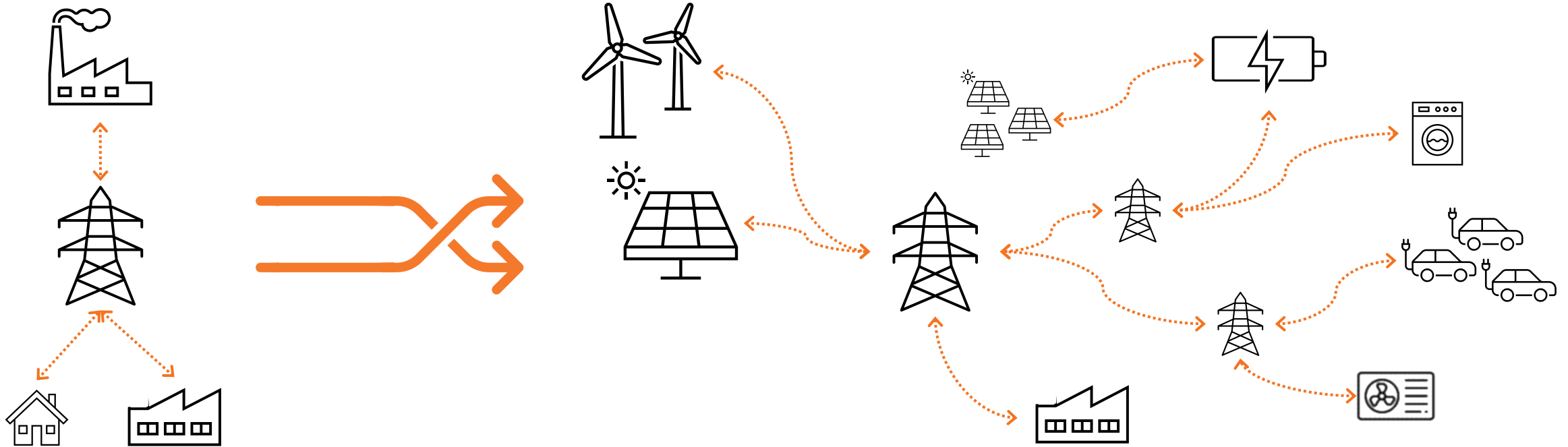


# What digital infrastructure is needed to enable flexibility markets

- The Future of Distributed Flexibility



**Dr Nina Klein**  
**Enabling Flexibility Markets team, Ofgem**  
**November 2023**



We need to transition to a **flex-centric energy system:**

**10mn EV = 3 Nucs**  
**10GW of EV flex potential,**  
assuming 1kW per EV, by **2035**

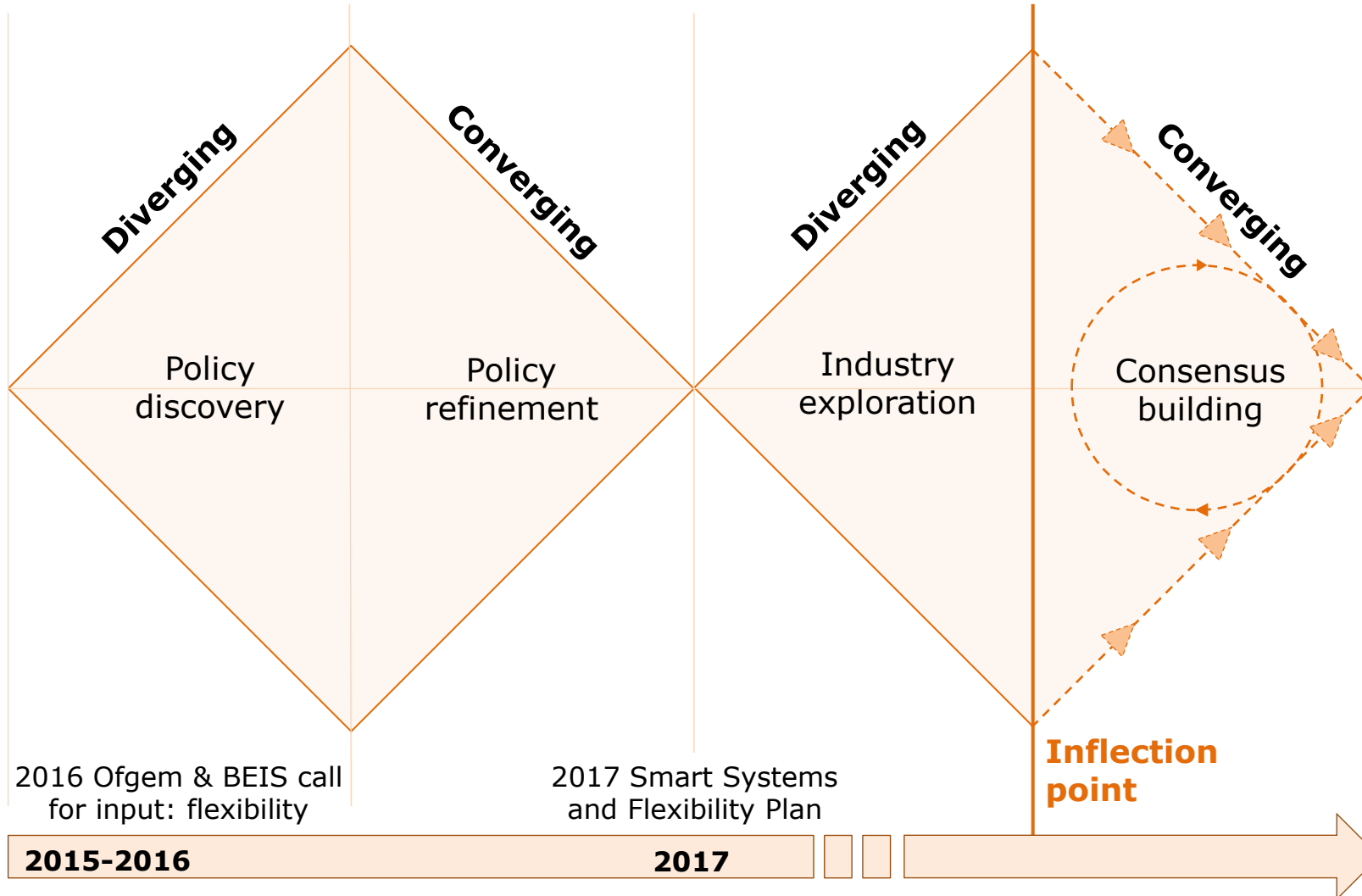
*Aurora Energy Research*

**£5 billion /year**  
**System cost savings** from  
demand side flexibility in **2050**

*Carbon Trust & Imperial modelling*

## Early policy development

## Develop and implement



**Call For Input  
The Future of Distributed  
Flexibility**  
March – May 2023

**Common  
vision for  
distributed  
flexibility**

**Flexibility  
Digital  
Infrastructure**

Transparent,  
coordinated and  
trusted markets

Enabler

Enabler

Enabler

**Market failure 1:**  
lack of **information transparency**

**Market failure 2:**  
lack of **coordinated market access and operations**

**Market failure 3:**  
lack of **trust**

**Market failure 4:**  
contextual **market-specific issues**

## Part A: FDI

### Flexibility Digital Infrastructure

#### 1. Information Transparency

- market rules and product data
- asset capability and performance data
- current and historic market data

#### 2. Coordinated Market Access & Operations

- streamline registration / procurement / qualification processes
- improve coordination for multi-market stacking / primacy

#### 3. Trusted Governance

- uphold standard processes and security
- participatory change management processes
- transparency in decision making

## Part B: Enablers (direct)

Data standards

Standardised market products

Standardised contracts & pre-qual

Stacking and primacy rules

## Enablers (indirect)

Operational metering

Baselining methodologies

Minimum 1MW limits

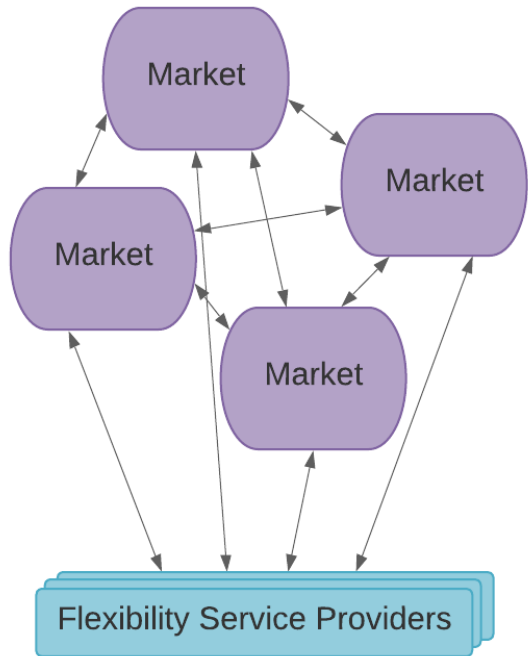
Minimum liability amounts

To emphasise the importance and urgency of **enablers delivery** we published an [Open Letter](#) to the **ENA Open Networks Project**

Examples on a spectrum, to stimulate discussion:

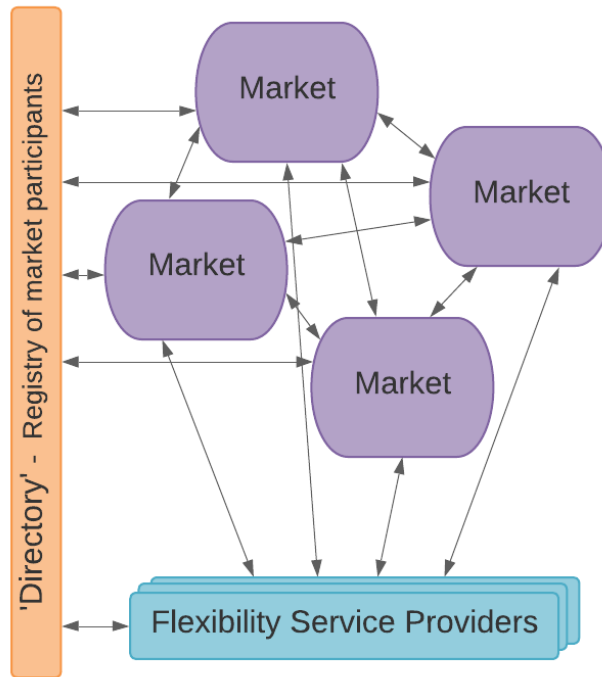
*\*FDI formerly known as CDEI (common digital energy infrastructure)*

## 1. BAU continues "individual markets"



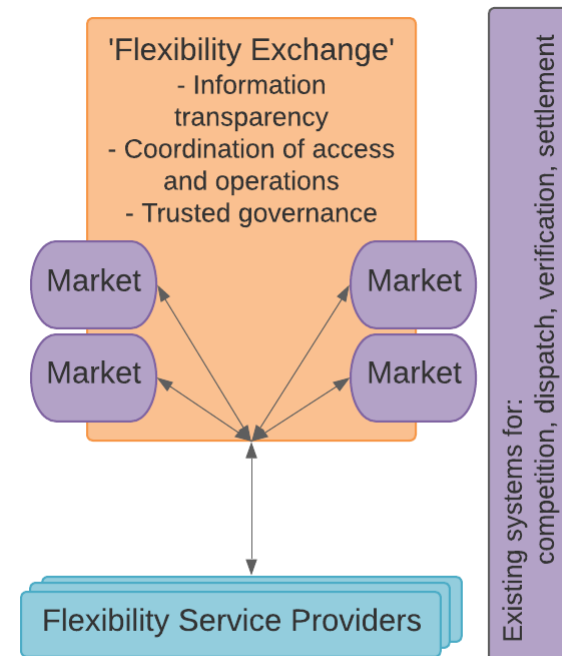
Some Standardised  
Data Exchanges

## 2. Thin "directory"



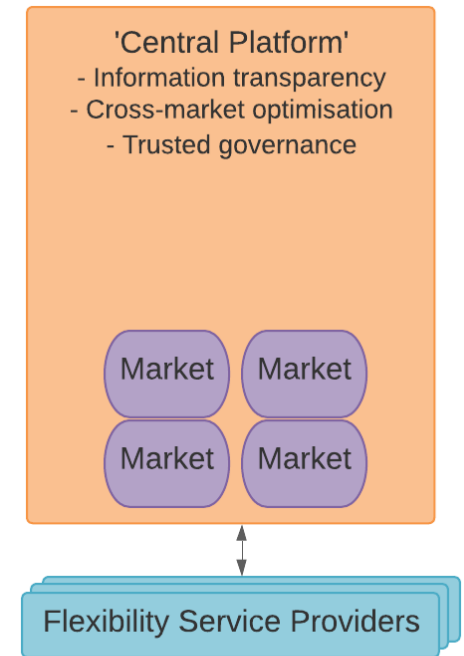
Standardised  
Data Exchanges

## 3. Medium "flexibility exchange"



Standardised  
Data Exchanges

## 4. Thick "central platform"



Standardised  
Data Exchanges

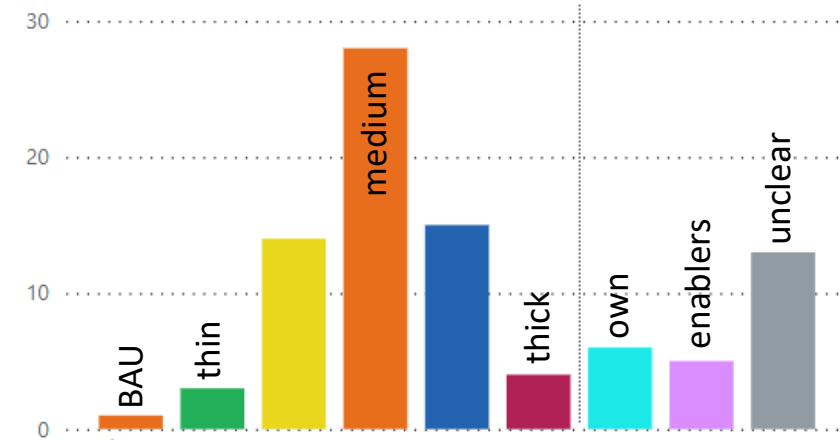
More granular functionalities, using IEC/SGAM standard approach:

BUC #	Title	Narrative	Responses
BUC.1	<b>Common data standardisation &amp; sharing mechanism</b>	A dedicated coordinative mechanism (i.e. self-serve data sharing infrastructure or a central data warehouse) used for exchanging a range of standardised data types and formats and ensuring information integrity and cybersecurity.	N > 20
BUC.1.1	<b>Common data standards &amp; wider IT architecture</b>	Users benefit from the definition and governance of harmonised information models, data formats and communication protocols for data exchange where needed, spanning across the SGAM interoperability layers via a set of evolving data standards.	
BUC.2	<b>Common registration of assets</b>	Users are able to register assets 'once' for all flexibility markets, by providing detailed information (such as asset type, location, asset size, connection point) common to all markets into a dedicated registry.	
BUC.3	<b>Common analytics services and information portal</b>	Users can see all available markets, historic pricing, forecasted prices, volumes (i.e. more dynamic SLC31E data) and benefit from wider information provision (i.e. Fully Informing Consumer) and analytics services (i.e. Asset value based on historical data).	10 < N < 20
BUC.4	<b>Common registration of buyers and sellers</b>	Users benefit from some form of Unified Identity and Access Management system (such as a self-sovereign identity paradigm) for securely interacting with multiple markets and market services.	
BUC.5	<b>Common registration of products</b>	Users get access to harmonised directory of products for all markets, including all the listed service requirements in an easily comparable format.	
BUC.6	<b>Common TSO-DSO coordination services</b>	A range of services including resolving primacy rules and ensuring transparent inter-market bid conflict resolution, making available grid topology data and standardised grid constraint representations, instantiating common market clearing processes, providing market coupling services (i.e. Transparency of DER positions and actions)	N < 10
BUC.7	<b>Common pre-qualification of assets</b>	Users have a common mechanism for registering data that is required for the pre-qualification processes for many products 'just once'. This could also enable more joined up digital contracting between MOs after successful pre-qual.	
BUC.8	<b>Common trust and market monitoring services</b>	A range of services including Change Management, initiatives to prevent gaming, promote transparent decision-making, protecting consumers (tariff design visibility, data protection etc.), supporting 24/7 hourly REGO certification.	
BUC.9	<b>Common reporting services</b>	A range of services for credit checking, reporting on dispatch and settlement, sharing asset performance data, enabling consistent baselining and metering standards.	

From **90(!) responses:**

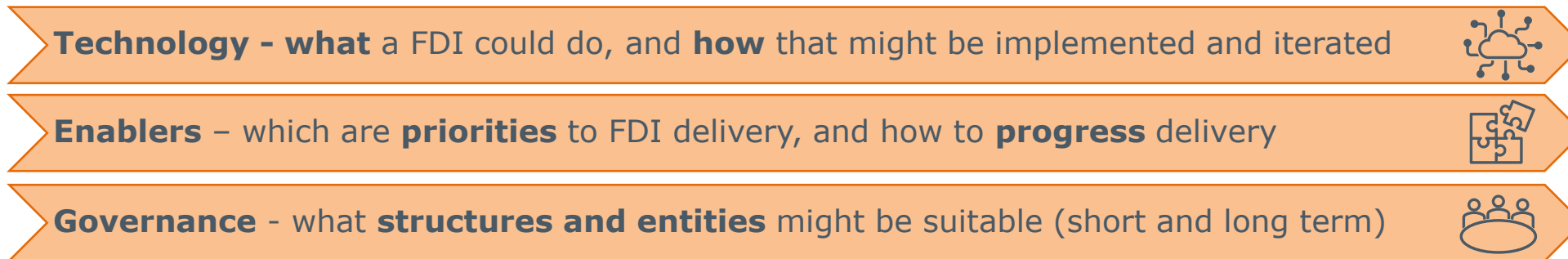
- 93% agreed with the **case for change**, wanting a common vision for enablers and unlocking flex value
- Most support **some form of FDI**, 63% want some form of medium (incl thin-med or thick-med)
- Near universal consensus that **enablers are essential** for distributed flex and FDI
- **Lack of clarity on governance** model preferences

We have a strong **mandate to progress** this work



We [published](#) a **Response Letter** alongside **individual stakeholder responses**

Initial **forward plan** to develop specific proposals across:



We are developing policy and **engaging industry** through workshops, intending to **consult in Spring 2024** and **progress delivery** where possible

Actively aligning with **ongoing industry, innovation and government** work

## **DESNZ Flex Markets Unlocked Innovation Programme**

- design and development of **technical solutions** that facilitate **coordination and standardisation** across **multiple flexibility markets**



Department for  
Energy Security  
& Net Zero

1

**Information transparency:** enabling greater visibility of asset, product and market data for all market participants

2

**Market access:** enable improved access to flexibility markets via common and streamlined processes

3

**Market coordination:** improvement of operational efficiency by providing mechanisms to coordinate across multiple markets

4

**Trusted governance:** enabling transparency in decision-making and governance, fostering trust in the marketplace

## **Ofgem Local Governance team**

- Proposing a **Market Facilitator Role, single expert entity** to standardise and **align ESO-DSO markets**
- Possible **alignments and synergies** with FDI governor role
- Intending to publish a **decision in Autumn 2023**, following previous [consultation](#)

## **Ofgem Energy Digitalisation team**

- Developing overall **Data Sharing Infrastructure (DSI)** vision, drawing on [EDiT](#) and [Digital Spine](#)
- Could provide the broad **digital foundations** for flexibility specific FDI to align with
- Intending to publish a **consultation in Spring 2024**



## **Call For Input - The Future of Distributed Flexibility**

<https://www.ofgem.gov.uk/publications/call-input-future-distributed-flexibility>

(closed 10<sup>th</sup> May 2023)

### **Subsidiary documents include:**

IBM – Digital Design Study

OGS consortium – Market Standards Study

Join our mailing list!

**Email us:** [flexibility@ofgem.gov.uk](mailto:flexibility@ofgem.gov.uk)

## **Our next workshop is on Governance arrangements**

Tuesday 7<sup>th</sup> November, online - email to register [flexibility@ofgem.gov.uk](mailto:flexibility@ofgem.gov.uk)

**Ofgem is the Office of Gas and Electricity Markets. We are a non-ministerial government department and an independent National Regulatory Authority, recognised by EU Directives. Our role is to protect consumers now and in the future by working to deliver a greener, fairer energy system.**

**We do this by:**

- **working with Government, industry and consumer groups to deliver a net zero economy at the lowest cost to consumers.**
- **stamping out sharp and bad practice, ensuring fair treatment for all consumers, especially the vulnerable.**
- **enabling competition and innovation, which drives down prices and results in new products and services for consumers.**