# Call for Input on ESOs Flexibility Markets Strategy

**May > Friday 28th June 2024**

ESO

## Purpose of this document

This is a Call for Input for the proposed Flexibility Markets Strategy – an opportunity to work together, providing feedback prior to the publication of the full strategy this Autumn.

To ensure we're heading in the right strategic direction and able to achieve our aims, we want to work in collaboration with you to develop the Flexibility Markets Strategy.

Within the Call for Input we share our vision, our 2029 outcomes, our six workstream summaries and our success measures. This proposed strategy covers the next five years, focusing on the low or no-regret actions needed to unlock the flexibility required for achieving a net-zero electricity system.

## Your involvement

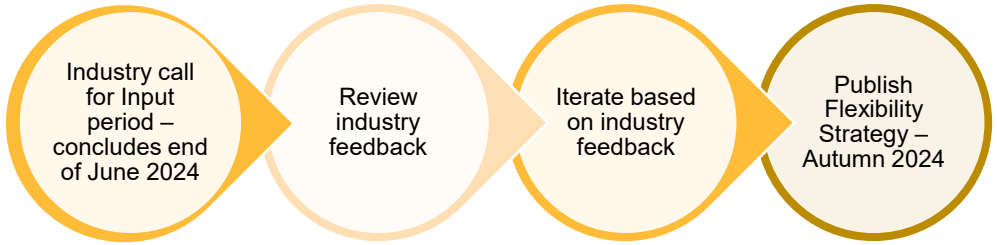
Details of the Flexibility Markets Strategy and our questions to you are contained within this pack, alongside a supporting video to help guide you through the document. Following your review, we would appreciate your time in filling in our short questionnaire, follow this **link,** based on the questions in this pack.

The Call for Input period will run until **Friday 28th June 2024.**

## Next steps

We are open to 1-1 sessions with interested parties, please email us at flexibilitystrategy@nationalgrideso.com with your questions and availability. We will be hosting a Q&A session on Wednesday 5th June 2024 to answer some of your initial questions - please register here.

Please sign up to our newsletter so that you we can inform you of any announcements.



# Contents

# Executive Summary

- Why we need flexibility
- Purpose, vision and outcomes
- Strategy Workstreams

# Executive summary: Why we need flexibility

The rise in weather dependent generation, coupled with variations in demand and increased electrification, will introduce greater need for flexibility at both transmission and distribution levels.

Flexibility allows for generation and demand to be shifted, helping manage second by second energy balancing and helping avoid curtailment, and results in better utilisation of existing resources and less overbuilding of network capacity. With the decline of flexibility from conventional dispatchable generation, the growth of flexibility, including demand side flexibility, becomes crucial for ESO to balance a fully decarbonised system at the most efficient cost.

The ability to shift in time or location the consumption or generation of energy.

In the Operability Strategy Report (OSR), we defined flexibility needs into three categories according to their delivery timescale:

- **Flexibility for Frequency:** second-by-second imbalances lasting less than 30 minutes
- **Within-Day Flexibility:** daily imbalances lasting 24 hours of less
- **Flexibility for Adequacy:** long periods of over or under supply lasting more than 24 hours

These flexibility categories can contribute to both non-locational and locational flexibility needs, helping manage requirements such as national energy balancing or thermal constraint management.

In the long term, we expect some requirements to be delivered largely by a reformed wholesale market, with industry initiatives such as Market-wide Half Hourly Settlement (MHHS), Energy Retail Market Reform, and Smart and Secure Electricity System driving access to significant volume of flexibility.

In the medium term, our strategy will aim to unlock flexibility and identify gaps in areas of lesser maturity, while finding opportunities for existing ESO services to be more inclusive.

In the immediate term, and aligned with our strategic drive, we need to better understand today's requirements and unlock flexibility via our existing services. Currently, ahead of MHHS, we seek to open more routes to market for demand to respond to price signals, including the continuation of DFS through winter 2024/25 during times of tight margins.

# Executive summary: Purpose, vision and outcomes

The flexibility markets strategy will enable us to easily deploy flexibility resources, focusing on three key outcomes:

## Our Purpose

The “Flexibility Market Strategy” is a response to the urgent need for mobilising flexibility as GB shifts towards a greener future. Our strategy intervenes ahead of enduring market arrangements set forth by REMA and implicit market signal enhanced by Market-wide Half Hourly Settlement. We aim to investigate the no-regret actions ESO, and our interdependent GB industry bodies, can take together to sharpen the market signals for flexibility in the medium term. It outlines our vision, the desired outcomes and associated activities needed in the next five years to unlock the flexibility required for achieving a net zero electricity system.

## The Flexibility Strategy Vision

Our vision is to **enable all flexibility resources to move seamlessly between markets**, **driven by effective market signals, delivering whole electricity system value to consumers.**

This vision directly supports ESO's 2035 goal of achieving a decarbonised, reliable, affordable, and fair electricity system.

## Key Outcomes by 2029

To access the flexibility required in the most cost-effective manner, all flexibility markets need to be competitive and work together in a coordinated and coherent way.

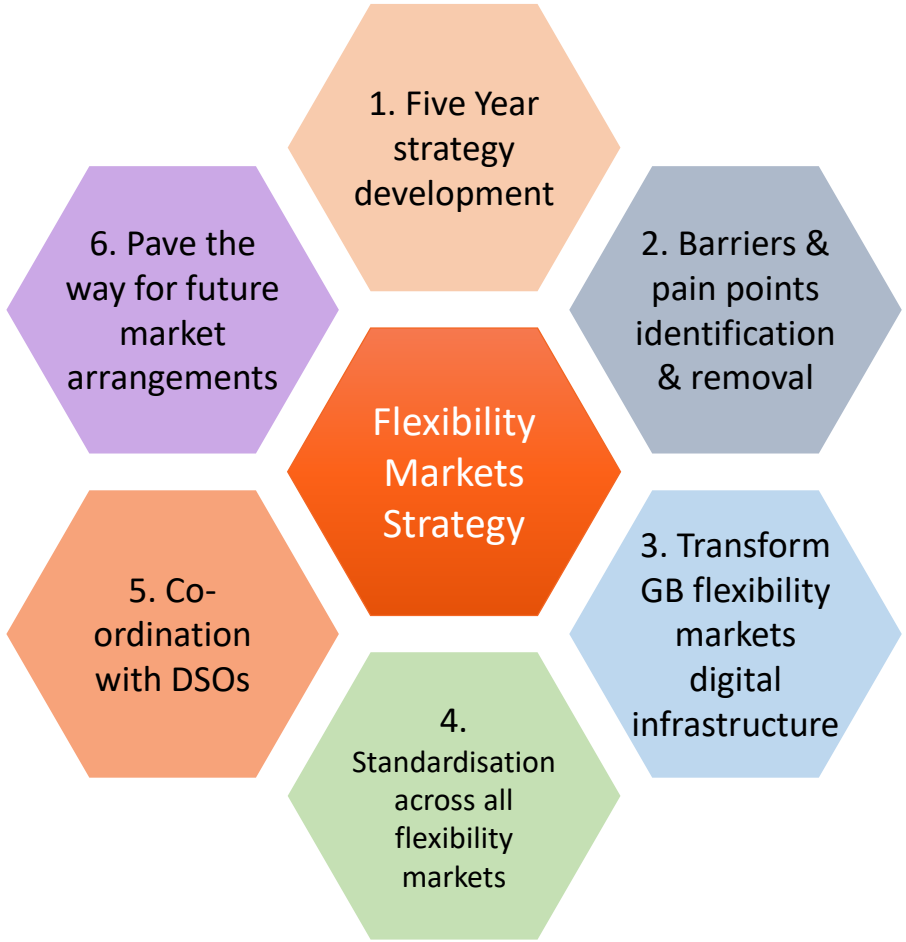
- **Competition:** all types of flexible resources can access a level playing field and inclusive markets to maximise the benefits of competition;
- **Coordination**: flexible resources can operate effectively and seamlessly across flexibility markets due to common practices and aligned standards;
- **Coherence**: flexibility service providers and wider sector have a clear, consistent, holistic view of market arrangements and policy

# Executive Summary: Strategy workstreams

## The strategy is divided into six workstreams all underpinning our core outcomes of competition, coordination and coherence.

Our three outcomes will be delivered by 6 workstreams:

1. **Developing a 5-year strategy** for system requirements improves transparency over future whole system needs and provides vital insights so markets can develop. This will include assessing if new products or services are needed, and if we can improve our current suite of services to better deliver our vision.
2. **Identify and remove barriers and pain points** to optimise the use of all available assets and make our markets more accessible, especially for new technologies and business models.
3. **Transforming GB flexibility market digital infrastructure** enables the success of all other workstreams.
4. **Standardisation across all energy markets where appropriate** to simplify providers' participation experience of services and processes, while lower admin costs, so flexibility resources are able to move seamlessly between GB markets.
5. **Coordinating with DSO/DNOs,** ESO will work collaboratively with our colleagues across distribution and with the Market Facilitator to understand how best to facilitate a whole system approach, ensuring parties at all levels of the system have the appropriate access and routes to markets.
6. **Paving the way for future market arrangements** by working with industry policy makers to understand the current and future reforms, creating the vital coherence required across the sector.



# Overview

- Case For Change
- The Decarbonisation Journey
- Scope of the Flexibility Strategy

**Questions to address throughout this section:**

**1. Do you have any comments or feedback regarding our Flexibility Markets Strategy map, our vision, outcomes and principles?**

# Case for Change

Decarbonisation is transforming the electricity system, impacting system operation, changing system requirements, and driving a need for increased volumes of flexibility. This need is triggering change across the energy sector to incentivise the flexibility required.

**The Operability Strategy Report (OSR) outlines five key changes that are driven by decarbonisation, all of which increase the need for flexibility on the system**: less dispatchable generation, more asynchronous generation, more variable sources of generation, generation moving to different areas and more variable and intelligent demand.

### Less dispatchable generation

- Flexibility resources are required to replace the capability lost by the closure of traditional, controllable generation.

### More asynchronous generation

- Traditional, asynchronous generation typically provides system services, such as inertia. As asynchronous plant becomes less readily available, the inertia available also decreases. This leads to a need for new flexibility assets and services to help manage the increasingly variable system frequency resulting from the lower system inertia.

### More variable sources of generation

- Variable generation is more dependent on an input to generate, like sun or wind, resulting in variability in energy output. This variability drives an increase in the need for flexibility assets to help manage the associated uncertainty and variability.

### Generation moving to different areas (decentralisation)

- Generation moving to network extremities will likely increase the number of constraints on the network and the associated cost of managing them – flexibility assets can help efficiently manage these constraints.
- As increased volumes of generation connects to the distribution networks, more flexibility will become available on the network as DERs increase in volume and become more accessible.

### More variable and intelligent demand

- Demand becoming more volatile drives an increase in the need for flexibility assets to help manage the associated uncertainty and variability.
- As demand becomes more intelligent, more flexibility will become available on the network as CERs increase in volume and become more accessible.

# Case for Change

## Flexibility Markets Strategy: Outcomes

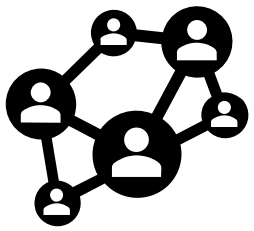
The Flexibility Markets Strategy ensures that, as we decarbonise, there is the flexibility required to **operate a secure, cost effective system.** This need encourages the energy sector to adapt current working practices, such as market arrangements, policies, and standards, to deliver the flexibility required to manage the electricity system.

Our vision is to ensure that all resources providing this flexibility are **enabled to move seamlessly between markets**, driven by effective market signals.

**We have identified three pivotal outcomes that are essential to meeting these objectives:**

### Competition

All types of flexible resources can access a level playing field and inclusive markets to maximise the benefits of competition

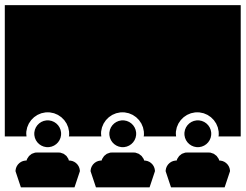


### Coordination

Flexible resources can operate effectively and seamlessly across flexibility markets due to common practices and aligned standards

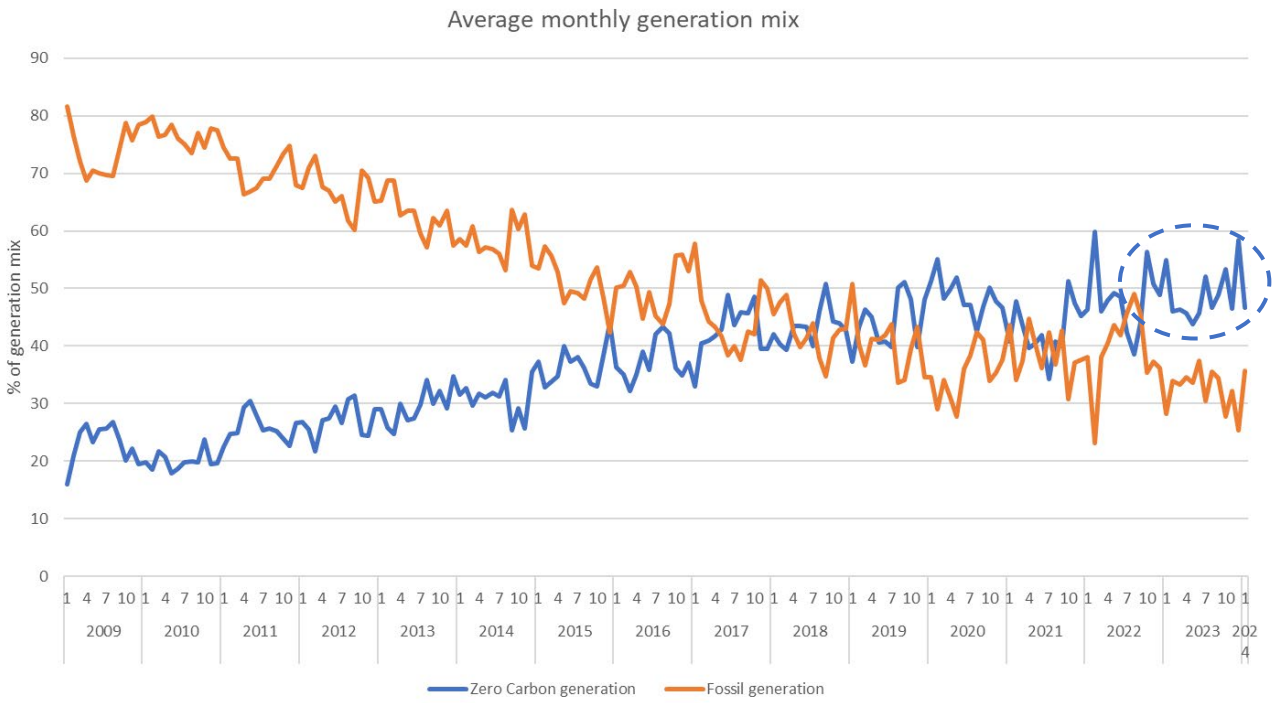
### Coherence

Flexibility service providers and wider sector have a clear, consistent, holistic view of market arrangements and policy



# The Decarbonisation Journey

## Challenges and Opportunities




- Currently GB is the **fastest decarbonising G20** country
- **Fossil generation has decreased by 60%** in a decade
- **Zero carbon generation has been greater than fossil generation** on the transmission system for over a year

As we continue this decarbonisation journey we will see an increasing need for flexibility on the system to combat the challenges that come alongside having a highly variable, renewable, electricity system.

The flexibility landscape is expected to **change** in the coming years:

EV contribute up to **10GW** peak demand in 2035 [1]

Peak household demand may **double** in 2050 [2]

Demand Side Response could triple to **7GW** by 2030 [3]

V2G could contribute **20GW** DSR after 2030 [4]

By 2050 **18GW** distribution connected battery in operation [5]

Smart charging of EV contribute **60%** peak demand reduction in 2050 [6]

An expected loss of 10GW of gas plant over the next 5 years [4]

Flexibility will be **required** by all System Operators:

**2.4 GW** of flexibility has been contracted by DSOs [7]

**~30GW of low carbon flex will be needed in 2030** [8]

Flexibility could deliver **large savings** for the end consumer:

Flexibility could deliver savings of **£3.2-4.7bn** per year by 2030 [9]

Deploying demand side flexibility could save around **£5bn** per annum in 2050 [10]

1-6. Future Energy Scenario
7. ENA ON GB Flexibility Figures 2023/2024
8. Transitioning to a net zero energy system -Smart Systems and Flexibility Plan 2021
9&10. Flexibility in Great Britain 2021; Carbon Trust and Imperial College London

# Scope of the Flexibility Strategy

## ESO Useful Links

- Operability Strategy Report – setting out the operability requirements
- Markets Roadmap – setting out the market strategy
- Net Zero Markets Reform – reviewing market design needed to achieve net zero

## Requirements

- Flexibility for both non-locational (general energy balancing) and locational (thermal constraint management)
- These requirements have been broken into three categories based on duration of delivering: Flexibility for Frequency, Within-Day Flexibility and Flexibility for Adequacy

**Flexibility for Frequency:**

Managing imbalances second by second, mainly for access in real-time

*< 30 mins duration*

**Frequency**: flexibility for access in real-time, for a duration of 30 mins or less
**Potential Purpose:** energy balancing, post-fault containment, steady-state frequency regulation etc
**Expected Capability**: e.g. high-speed assets or assets controlled via ESO/DSO

**Within-Day Flexibility:**

Managing daily peaks and troughs in supply and demand, lasting several hours in duration

*< 24 hours duration*

**Within-Day Flexibility:** flexibility for delivery within-day, for a duration of 24 hours or less
**Potential Purpose:** energy balancing, DNO flexibility services, transmission constraint management etc
**Expected Capability:** e.g. time-duration limited assets, aggregated assets, consumer flexibility

**Flexibility for Adequacy:**

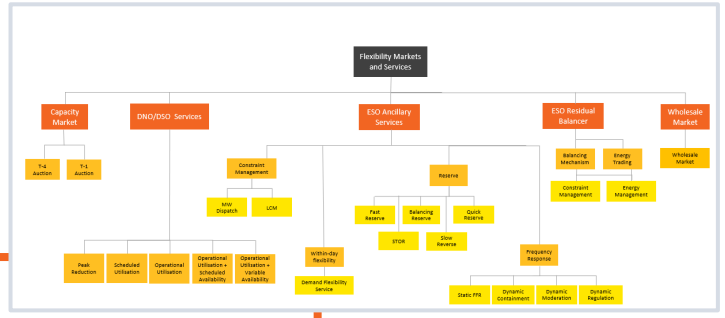
Managing periods of over and under supply from renewables lasting for days, weeks and months

*> 24 hours duration*

**Adequacy:** flexibility for delivery over days, months, years, for a duration of 24 hours or more
**Potential Purpose:** energy balancing for prolonged periods of oversupply, energy balancing for prolonged periods of under-supply, long-duration active constraint management etc
**Expected Capability:** e.g. very long duration storage or assets with another source of energy

More details on each of these areas can be found in Appendix II

**Scope**




## Markets:

- All markets are included within the strategy that enable the shift in consumption or generation of energy
- There will be a focus on understanding the interaction between ESO and non-ESO market

## Technologies:

- Enabling flexibility for all technology types
- However, in 'Identify and Remove Barriers' we have chosen to *initially* focus on DER and CER as typically they have a less established route to market and represent areas of significant growth

## Timeline:

- The focus will be to deliver a 5 year plan (from 2024 to 2029).
- By 2029, the outcome of the current REMA process will be known, which will influence next steps for flexibility markets

# Outline of Flexibility Markets Strategy

- High-level Strategy Map
- Strategy Horizon Roadmap
- How to measure our success

**Questions to address throughout this section:**

**2. Do you have any comments or feedback on our success measures and milestones?**

# Strategy Map

Below is the complete overview - how our strategy fits together from foundation to achieving 2035 Mission; the next slide provides workstream details and working timeframes; and the third slide shows how we will measure our success.

## 2035 Mission

**Transforming to a fully decarbonised electricity system which is reliable, affordable and fair to all**

## Our vision

**Enabling all flexibility resources to move seamlessly between markets, driven by effective market signals, delivering whole electricity system value to consumers**

## 2029 Outcomes

What must we achieve?

- A level playing field and inclusive markets to maximise **competition** between all types of flexible resources
- **Coordinated** flexibility markets across Great Britain
- Fit for the future, **coherent**, market arrangements

## Workstreams

Which are the actions that will help us achieve these outcomes?

- 5-Year strategy development
- Barriers & pain points identification & removal
- Standardization across all GB flexibility markets
- Coordination with DSOs
- Paving the way for Future Market Arrangements
- Transform GB flexibility markets digital infrastructure

## Principles

Which is our approach while designing the strategy?

- Deliver in partnership
- Consumer value driven
- Digital first mindset
- Transparent at every stage
- Technology inclusive
- Be flexible and adaptable
- Encourage innovation and creativity

# Strategy Horizon Roadmap

*our immediate focus

| Workstream | Now-2025 | 2025-2026 | 2026-2029 | 2029-2035 | 2035 |
|---|---|---|---|---|---|
| Longer-term strategy development | • Model within day & adequacy flexibility requirements*<br>• Thermal constraint strategy development* | • Build model for long-term Response and Reserve requirements<br>• Understand interactions between 3 flex requirements<br>• Develop long-term market strategy for ESO balancing services<br>• Design thermal constraint service | • Publish holistic flexibility requirements<br>• Develop flexibility procurement strategy<br>• Capacity Expansion Project<br>• Implement thermal constraint service | • Enhance implicit signal from MHHS<br>• Support REMA implementation<br>• Support new technology type grow<br>• Support GB flex market digital transformation<br>• continuing to ensure we maintain level playing field, coordination and coherence | Decarbonised system reliable, affordable and fair to all |
| Barriers & pain points identification & removal | • Define process for barrier and pain points identification and removal<br>• Identify and prioritise market access barriers* | • Assess market access barriers & define options<br>• Assess customer journey pain points for ESO services & GB markets | • Implement barrier and pain points removal<br>• Simplify customer journey for ESO services & GB markets | | |
| Transform GB flexibility markets digital infrastructure | • Design & Deliver Priority DER Visibility Use cases*<br>• Define 2026-2028 ESO platform plan<br>• ESO platforms continuous improvement<br>• Support FDI development & DSI | • Enhancing ESO platforms<br>• Achieving DER CER visibility | • Continuous improvement for ESO platforms<br>• VES data sharing infra MVP<br>• Achieving DER CER access | | |
| Standardisation across all markets | • Engage on MF design and transitional activities*<br>• Contribute to Open Networks' relevant workstreams and deliver on commitments<br>• Feedback pain points of DSO markets, CM and WM to relevant parties and contribute to solution design<br>• Identify pain points against Flexibility Value Chain for ESO markets | • Standardise ESO markets where appropriate<br>• Support Open Network / Market Facilitator to deliver ESO - DSO flex market standardisation | • Continue to implement changes identified by MF<br>• Support relevant parties to standardise across all flex markets | | |
| Coordination with DSOs | • Develop DSO engagement strategy<br>• MW dispatch trial<br>• Review DFS exclusivity clause*<br>• Identify and prioritise blockers for stacking*<br>• Work with Open Networks to establish data sharing & primacy process * | • Explore business case and feasibility to extend MW dispatch<br>• Support new Market Facilitator implementation<br>• Unlock ESO DSO jumping matrix | • Implement changes identified by Market Facilitator<br>• Facilitate wider types of stacking | | |
| Paving the way for Future Market Arrangements | • Develop design/reform options for REMA (advising DESNZ)*<br>• VLP access to WM<br>• TNUoS Task Force Closure Report<br>• Connection 5-point plan<br>• Support P415 implementation | • Support REMA design decision<br>• MHHS migration<br>• SSES Second legislation developed<br>• GB connection reform project | • REMA design and implementation<br>• MHHS migration complete<br>• ESA standards defined | | |

# How to measure our success

The Flexibility Markets Strategy has three outcomes that relate to the mission and vision. Through our six workstreams we will achieve our strategic aims and outcomes, measuring performance using success indicators and key milestones.

| 2029 Outcomes | Strategic aims | Success Indicator/ Milestone | Workstream / Activity |
|---|---|---|---|
| **Competition**<br>All types of flexible resources can access a level playing field and inclusive markets to maximise the benefits of competition | Provide clarity and direction to maximise market participation | Publish ESO flex requirements and market development strategy for next 5 years | 5-year strategy development |
| | Enhance market accessibility, broaden participant diversity and promote competition | Turn the market access matrix table (see appendix) from amber/ red to green/ grey. | Barriers & pain points identification & removal,<br>Transform GB flexibility markets digital infrastructure<br>& Standardization across all markets |
| **Coordination**<br>Flexible resources can operate effectively and seamlessly across flexibility markets due to common practices and aligned standards | Facilitate revenue stacking and enable flexibility service providers move seamlessly between markets | Stackable revenue stream | Transform GB flexibility markets digital infrastructure,<br>& Coordination with DSOs |
| | Simplify customer journey, encourage standardization and optimize market efficiency | Stakeholder satisfaction score increase | Barriers & pain points identification & removal,<br>Transform GB flexibility markets digital infrastructure<br>& Standardization across all markets |
| **Coherence**<br>Flexibility service providers and wider sector have a clear, consistent, holistic view of market arrangements and policy | Provide transparency for future market arrangements, clear pathway to achieve them and transition plan which includes timeline of when more clarity can be given | Volume of demand side flexibility capacity in ESO markets increase | Paving the way for Future Market Arrangements |

# Strategic Approach

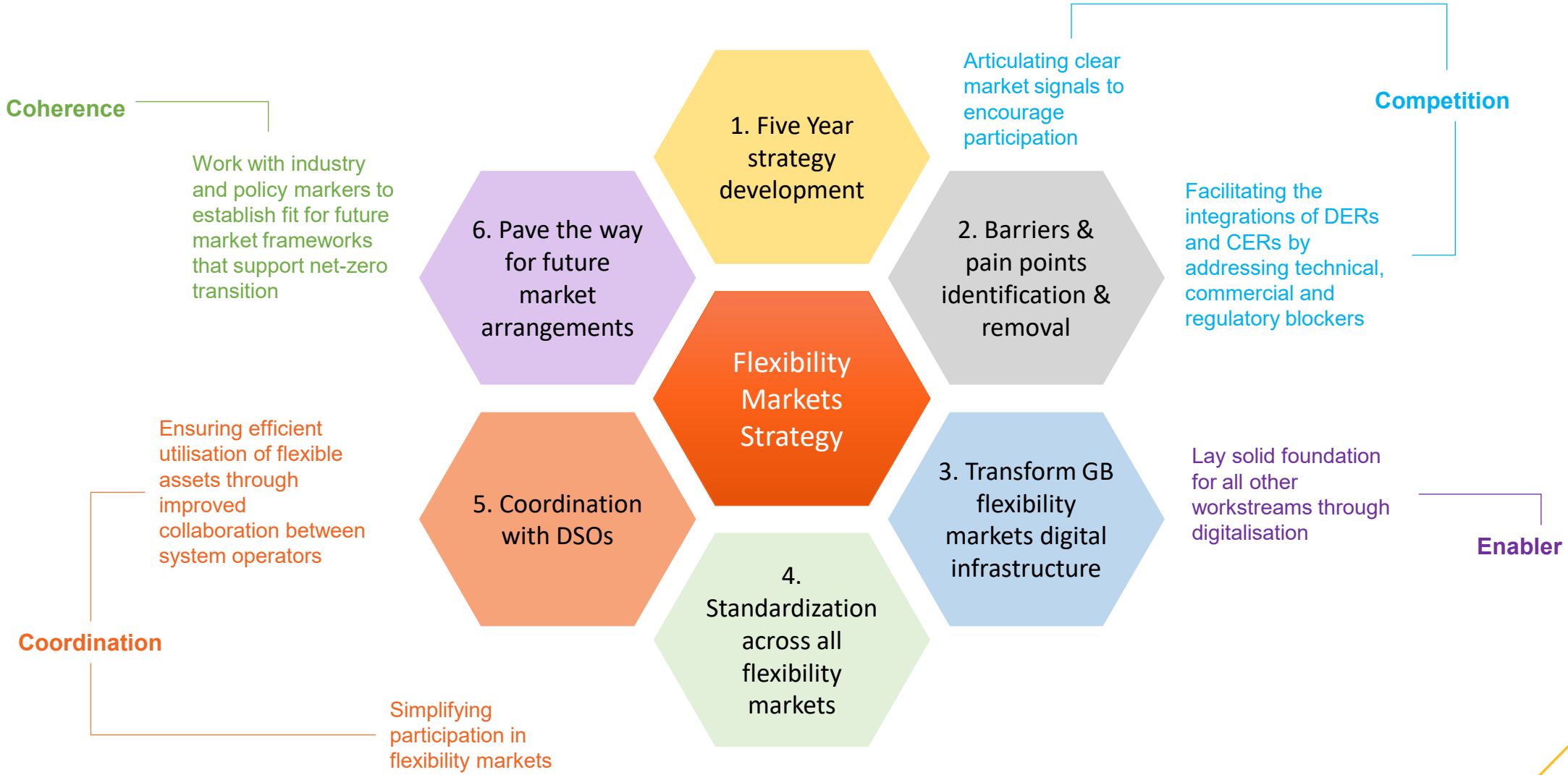
- Overview of Workstreams
- Workstream 1: Develop 5-year Strategy for System Requirements
- Workstream 2: Identify and Remove Barriers
- Workstream 3: Transform GB Flexibility Markets Digital Infrastructure
- Workstream 4: Standardisation across all Flexibility Markets
- Workstream 5: Coordination with DSOs
- Workstream 6: Pave the Way for Future Market Arrangements
- Working in Partnership with Industry

**Questions to address throughout this section:**

**3. Have you identified any gaps within any of the six workstream summaries, or do you have any general feedback regarding these summaries?**

# Overview of Workstreams

Through our workstreams we will achieve our **three strategic outcomes** of **competition**, **coordination** and **coherence**. Digitalisation acts as an enabler for each of the other workstreams to achieve their specific goals.



# Workstream 1: Develop 5-year Strategy for System Requirements

Our strategy will enable strong and clear market signals that are aligned with whole system needs, allowing for the scaling up of investment and mobilisation of flexibility

## Background and Rationale

- Flexibility providers cannot make confident assumptions on their revenues due to:
  - No clear picture of flexibility requirements
  - Unsure how ESO markets and other markets will be utilised in the future
- Key lessons from previous projects:
  - Joined-up, detailed strategy needed for enduring solutions e.g. *constraints*

## Outcomes - Competition

- Provide clarity and direction to maximise market participation by:
  - Providing certainty of future system needs
  - Delivering a clear strategy for procurement and market signals to deliver these future system requirements

## Scope and Focus

- Understand the flexibility requirements of our system, modelling and publishing these requirements
- Creating and establishing a system needs strategy

**Model and publish system need**

**Develop 5-year strategy for ESO market development**

**Delivering the procurement strategy for flexibility**

## Key Activities and Deliverables

| Activity/ Deliverable | Timeline |
|---|---|
| Model flexibility requirements: frequency, within-day & adequacy to understand system needs and market growth required;<br>Thermal constraints – developing strategy;<br>Highlight actions we can progress today to unlock access, prompting new trials of flex in ESO markets (inc. BM, DFS, LCM). | Today – 2025 |
| Build model for long-term response and reserve requirements<br>Understand how flex requirements interact (frequency, within-day & adequacy)<br>Develop long-term market strategy for ESO balancing services; co-optimise our services<br>Design thermal constraint service | 2025-2026 |
| Publish holistic flexibility requirements.<br>Develop flexibility procurement strategy.<br>Build ESO capabilities to utilise flexibility.<br>Implement thermal constraint service. | 2026-2028 |
| Update 5yr strategy and visibility of how we will meet system needs via ESO's published markets roadmap (service development) | Ongoing |

# Workstream 2: Identify and Remove Barriers

We will identify and remove barriers to our services so that all types of flexible resources can access a level playing field and inclusive markets to maximise the benefits of competition;

## Background and Rationale

- Distributed Energy Resources will be a fundamental part of a net zero energy system.
- Distributed flexibility is vital for maintaining a zero carbon, secure and affordable electricity system.
- There are barriers to certain types of flexibility from participating in markets.
- There is no clear picture of barriers, prioritisation and roadmap for change.

## Outcomes - Competition

- Barriers to markets removed, increasing participation and competition across all markets.
- A smooth customer journey across ESO & other markets, enabling flexibility to move seamlessly.
- Greater transparency and confidence in ESO market changes.

## Key Activities and Deliverables

| Activity/ Deliverable | Timeline |
|---|---|
| Define process for barrier and pain points identification and removal. | 2024 |
| Publish routes to market review for demand side flexibility. | 2024 |
| Publish barrier removal commitments & roadmap, coordinating with workstream 4 to ensure cross GB market alignment. | 2024 - 2025 |
| Identify & map customer journey pain points for ESO services & GB markets | 2024 - 2025 |
| Publish customer journey improvements roadmap | 2024 - 2025 |
| Track and communicate roadmap for change and progress | Continuous |

## Scope and Focus

- This workstream focuses on identifying, prioritising and removing barriers and pain points for Distributed Flexibility across ESO services, and alignment with non ESO markets.
- The workstream is developing a transparent process so stakeholders can engage with and influence change.
- For barriers not fully in our control, we will seek to influence the relevant codes, regulations and policies in order to remove these barriers.

As part of this workstream we are publishing a draft Routes to Market Review for demand side flexibility alongside this call for input. This review aims to engage demand side flexibility stakeholders in identifying barriers to ESO markets & in informing ESO change activities to remove barriers. A summary of current barriers for demand side flexibility can be found in the appendix of this call for input.

# Workstream 3: Transform GB Flexibility Markets Digital Infrastructure

Transforming our digital infrastructure to operate a decarbonised, decentralised and digitised electricity system

## Background and Rationale

- Small scale distributed and consumer assets will play a key role in zero carbon system.
- Flexibility needs to be able to move seamlessly across markets in order to deliver whole system value.
- Our systems need to be transformed to enable modern digitally enable assets.

## Outcomes

- Control room can operate large number of DERs and CERs.
- ESO platforms are upgraded to enable small assets and simplify the customer journey.
- Platforms across GB markets are coordinated and standardised where appropriate.

## Scope and Focus

- This workstream focuses on upgrading our digital infrastructure to enable DERs and CERs to deliver whole system value, including upgrading to a modern architecture, improved data collection, visibility and sharing, and simplifying the customer journey across ESO and GB markets.

## ESO Infrastructure Digitalisation

- DER/CER Visibility/Forecasting
- Enhancing ENCC's Balancing Capabilities (OBP)
- Implement Single Markets Platform (SMP) to simplify registration through one platform
- Implement Digital Engagement Platform (DEP) to simplify collections of information and query management for providers
- Enduring Auction Capability (EAC) to enable bidding and co-optimization through one platform

## Industry Digitalisation

- Flexibility Digital Infrastructure (Ofgem)
- Flexibility Unlocked project (DESNZ)
- Energy system data sharing infrastructure
- DESNZ – Automatic Asset Registration (AAR)

## Key Activities and Deliverables

| Activity/ Deliverable | Timeline |
|---|---|
| Upgrading our control room capabilities, building the infrastructure for DER and CER visibility. | 2024 – 2028 |
| Enduring Auction Capability(EAC) quick reserve and slow reserve | 2024 - 2025 |
| All balancing services procured through the Single Markets Platform (SMP) | 2025 |
| Enhancing Balancing Capabilities in Control Room – Open Balancing Programme | Iterative releases |
| Coordinating with industry programmes to deliver a smooth customer journey and coordination of GB data and digital systems, including the Flexibility Digital Infrastructure(FDI) programme, data sharing infrastructure & asset registration infrastructure. | 2024 – 2028 |

# Workstream 4: Standardisation across all Flexibility Markets

Appropriate standardisation of services and processes across ESO, DSOs, CM, WM is necessary to increase competition, enable revenue stacking and drive efficient network operation

## Background and Rationale

- Complex landscape of services and inefficient customer journey is a barrier for flexibility service providers to move seamless between markets
- The core of standardisation is to simplify providers' customer journey in flexibility markets. We will:
  - Drive standardisation across ESO markets
  - Support Open Networks / Market Facilitator to deliver standardisation across ESO/ DSO markets
  - Influence standardisation across ESO, Capacity market and Wholesale market

## Outcomes - Coordination

- Common service and process design to simplify providers' participation experience and lower admin costs so flexibility resources are enabled to move seamlessly between GB markets
- Increased participation and competition across all markets, delivering value for end consumers

## Key Activities and Deliverables

| Activity/ Deliverable | Timeline |
|---|---|
| Review opportunity for standardisation across ESO markets by identifying and prioritising pain points against customer journey | 2024-2025 |
| Contribute to Open Networks' relevant workstreams and deliver on commitments | 2024-2026 |
| Support design and implementation of Market Facilitator | 2024-2025 |
| Implement changes identified by MF | Continuous Improvement |
| Feedback pain points of non-ESO markets to relevant parties and contribute to solution design | Continuous improvement |
| Adapt ESO markets where needed to support standardisation across all flex markets | Continuous improvement |

## Scope and Focus

Standardise across Flexibility Market Customer Journey: service design, contract terms, data processes, regulation and standards, platforms etc.

**Customer Journey in Flexibility Markets**

Market Development → Onboarding → Bidding → Contract Management → Dispatch → Delivery → Settlement → Reporting

# Workstream 5: Coordination with DSOs

Creating coordination, data sharing and governance processes with DSOs is key to driving efficient network operation and lowering cost to consumers

## Background and Rationale

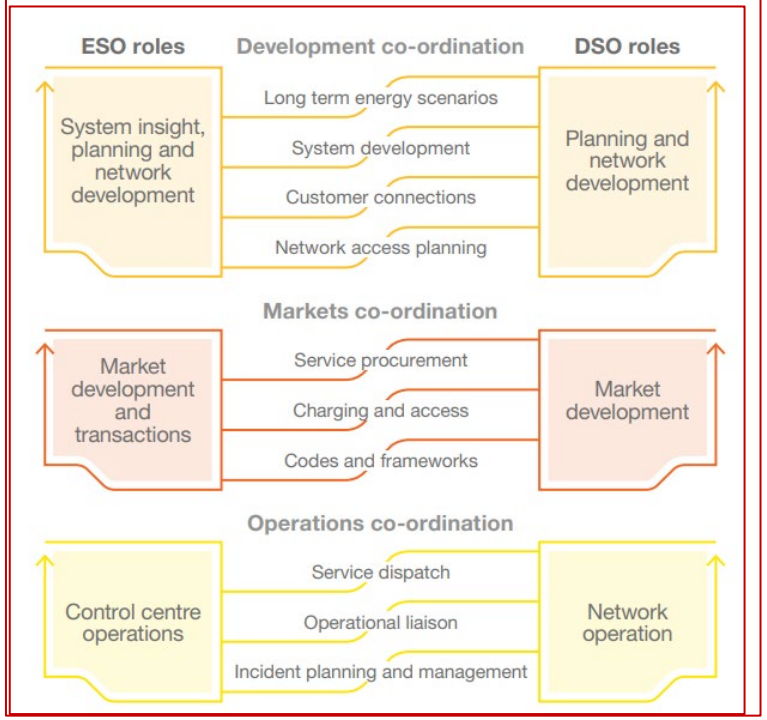
- ESO and DSO flexibility services are developed and procured independently, creating a complex market landscape for providers
- Dispatching of CERs & DERs, without other network operator visibility, drives inefficient DSO/ESO operation

## Outcomes - Coordination

- Clear process for managing conflicts, market operators can dispatch flexible assets without fear of conflicts
- Established data sharing processes that enable coordination
- Coordinated flexibility procurement amongst network operators. Service providers can access stackable revenue streams.

## Scope and Focus

- This strategy mainly focuses on the co-ordination of market developments and system/ network operation. Development co-ordination will be addressed within the Regional Energy Strategic Planner role (RESP).




## Key Activities and Deliverables

| Activity/ Deliverable | Timeline |
|---|---|
| Develop ESO-DSO coordination vision and engagement strategy<br>Establish data sharing requirements and develop processes and systems to enable sharing. | 2024-2025 |
| Facilitate ESO-DSO revenue stacking<br>Immediate focus for Yr24/25:<br>Lead Open Networks Stackability working group<br>Review DFS exclusivity clauses<br>Identify barriers for unlocking stacking | 2024-2026 |
| Understand and appreciate DSO various requirements across the country. And factor this into all our flexibility market design activities. | Continuous Improvement |
| Implement changes identified by MF | Continuous Improvement |
| Leverage pioneer projects, such as:<br>Single Market Platform data sharing trial;<br>Regional Development Programme (RDP) - the MW Dispatch service | 2024-2028 |
| Design and deliver DER CER Visibility & Accessibility project | 2024-2029 |

# Workstream 6: Pave the Way for Future Market Arrangements

Working alongside industry and policy makers to help create coherent market arrangements that flexibility can confidently navigate as we decarbonise an affordable and secure energy system, helping signpost clear pathways as we transition to these future market arrangements

## Background and Rationale

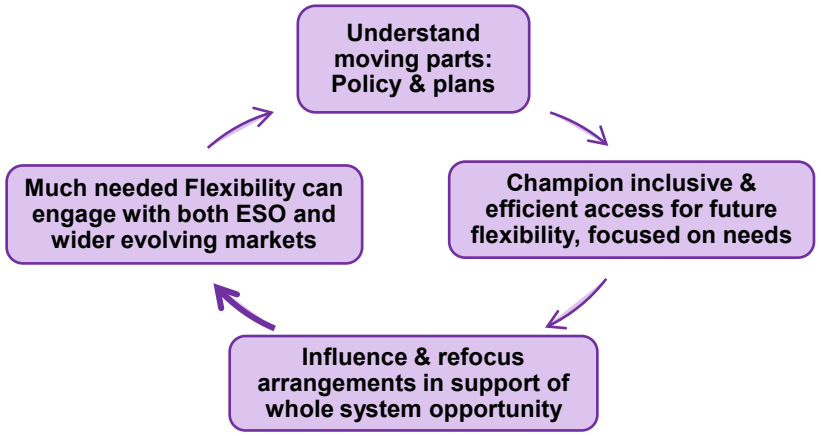
- Current market arrangements, designed for yesterday's system, need reforming to support flexibility of both supply & demand
- Need for market coordination e.g. pre-REMA, ESO is working on Net Zero Market Reform
- Need for clear visibility of evolving market arrangements so all stakeholders can plan ahead

## Scope and Focus

- Influencing key change programmes - adopting a whole system approach to frameworks:
  Market-wide Half Hourly Settlement;
  Review of Electricity Market Arrangements;
  Network Charging Reform;
  Smart and Secure Electricity System; CM & CfD;
  GB Connections Reform; ELEXON ABSVD review project;
  Article 18 revision; Measuring Instruments Regulations (MIR); analysis & objective assessment for REMA;
  Priority focus: pre-REMA opportunities.

## Outcomes - Coherence

- Mid-term activities are aligned with future market reforms
- Coherence and clarity of emerging policy: stakeholders and the system know what is coming and are prepared for market change
- Clarity on strategic direction, with confidence how to navigate future market arrangements



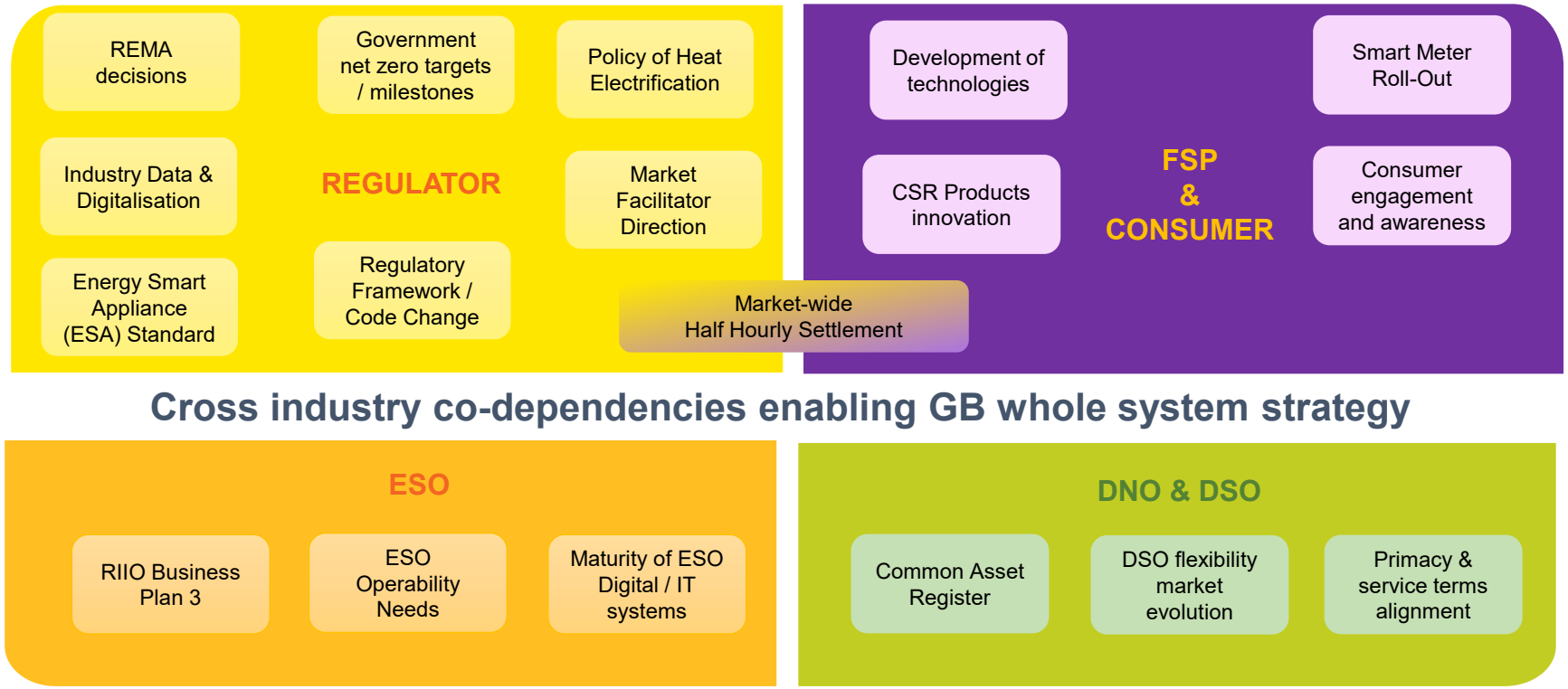

## Key Activities and Deliverables

| Activity/ Deliverable | Timeline |
|---|---|
| Develop reform options for REMA (priority)<br>VLP access to wholesale market<br>TNUoS Task Force Closure Report<br>Connection 5-point plan<br>Support P415 implementation | 2024-2025 |
| Support REMA design decision<br>MHHS migration<br>SSES Second legislation developed<br>GB connection reform project | 2025-2026 |
| REMA design and implementation<br>MHHS migration complete<br>ESA standards defined | 2026-2028 |
| Horizon scanning to identify future market interventions as policy landscape evolves | Ongoing |
| Create a cohesive overview, updating stakeholders for the future arrangements<br>Advise wider net zero markets reforms for inclusive & effective flexibility | Ongoing |
| Champion market opportunities, fully using system needs to influence arrangements | Ongoing |

# Working in Partnership with Industry

We aim to continue working closely with all key industry bodies as we progress with this strategy. Within each of the workstreams there are many interdependencies with industry wide projects, ranging from DSO evolution to transforming digital infrastructure.

We are working in partnership across the industry to monitor and map key dependencies, including the outcomes of REMA, Smart Meter Roll-Out, Industry Data & Digitalisation and DSO flexibility market evolution.




This diagram does not represent an inclusive list of all dependencies. Dependencies can interact, directly or indirectly, with each other.

# Next Steps

Call for Input - Feedback Questions

# Call for Input – Feedback Questions

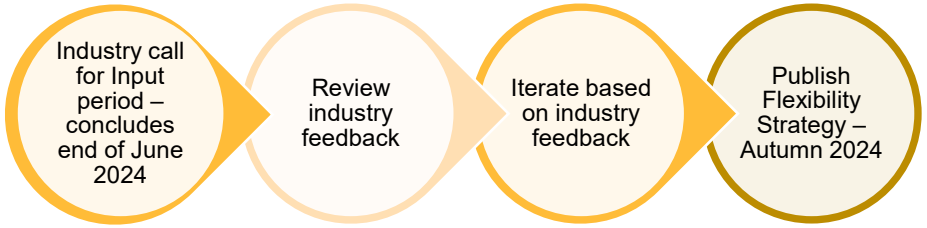
This document describes **ESOs Flexibility Markets Strategy** so that industry partners can **provide feedback prior to the publication of the full strategy**, ensuring we are heading in the **correct strategic direction**.

**Please provide feedback based on the following questions using this link.**

| | Questions |
|---|---|
| 1 | Do you have any comments or feedback regarding our Flexibility Markets Strategy map, our vision, outcomes and principles? (slide 14) |
| 2 | Do you have any comments or feedback on our success measures and milestones? (slide 16) |
| 3 | Have you identified any gaps within any of the six workstream summaries, or do you have any general feedback regarding these summaries? (slides 18-24) |
| 4 | Do you have any general feedback or further suggestions for areas of improvement? |
| 5 | On a scale of 1 to 10, please rate the clarity of our strategy and roadmap explanation overall and provide reasoning for your rating. |

**We are open to 1-1 sessions with interested parties, please email us at flexibilitystrategy@nationalgrideso.com with your questions and availability.**

**The call for input period will run until Friday 28th June 2024**



# Appendices

**Appendix I**

- Acronyms

**Appendix II**

- Case for Change: Understanding the impact of decarbonisation
- Flexibility Landscape and Needs
- ESO Flexibility Requirements
- Flexibility Markets
- Flexibility Markets and Requirements

# Appendix I

Acronyms

# Acronyms

| Acronym | Definition |
|---|---|
| BM | Balancing Mechanism |
| BTG | Bridging the Gap |
| CEP | Clean Energy Package |
| CER | Consumer Energy Resources |
| CM | Capacity Market |
| DEP | Digital Engagement Platform |
| DER | Distributed Energy Resources |
| DESNZ | Department for Energy Security and Net Zero |
| DFS | Demand Flexibility Service |
| DNO | Distribution Network Operator |
| DSI | Data Sharing Infrastructure |
| DSO | Distribution System Operator |
| EAC | Enduring Auction capability |
| ESA | Energy Smart Appliance |
| ESO | Electricity System Operator |
| ETYS | Electricity Ten Year Statement |
| EV | Electric Vehicle |

| Acronym | Definition |
|---|---|
| FDI | Flexibility Digital Infrastructure |
| FES | Future Energy Scenario |
| FRCR | Frequency Risk and Control Report |
| FSP | Flexibility Service Provider |
| GB | Great Britain |
| HND | Holistic Network Design |
| IS | Information System/ Services |
| LCM | Local Constraint Market |
| MF | Market Facilitator |
| MMHS | Market-wide Half Hourly Settlement |
| MVP | Minimum viable product |
| MW | Mega watt |
| NOA | Network Options Assessment |
| OBP | Open Balancing Programme |
| OSR | Operability Strategy Report |
| P415 | Balancing & Settlement Code Modification P415 |

| Acronym | Definition |
|---|---|
| RDP | Regional Development Programme |
| REMA | Review of Electricity Market Arrangements |
| RESP | Regional Energy Strategic Plan |
| SMP | Single Markets Platform |
| SSEP | Strategic Spatial Energy Plan |
| SSES | Delivering a Smart and Secure Electricity System |
| STAR | Settlements and Revenue system |
| TCSNP | Transitional Central Strategic Network Plan |
| TO | Transmission Owner |
| TNUoS | Transmission Network Use of System |
| V2G | Vehicle to Grid |
| VES | Virtual Energy System |
| VLP | Virtual Lead Party |
| WM | Wholesale Market |

# Appendix II

- Case for Change: Understanding the impact of decarbonisation
- Flexibility Landscape and Needs
- ESO Flexibility Requirements
- Flexibility Markets
- Flexibility Markets and Requirements

# Case for Change: Understanding the impact of decarbonisation

## Decarbonisation: The Changing System

**Decarbonisation is driving significant change across the electricity network, impacting how we operate the system now and into the future.**

The system is continuing to evolve as we move towards net zero. This means a fundamental change in how the electricity system is structured, integrating newer technologies across the system; from large scale offshore wind, to domestic scale solar panels, to increased demand side participation, to increased electrification of heat and transport. These changes mean the system will become more variable and volatile, presenting new challenges for system operators, resulting in changes across the industry.

As the ESO, in our role of powering Britain, we want to work with industry to ensure that we are ready to decarbonise the power system, having the appropriate technologies, markets, and policies in place.

Decarbonisation of the electricity system is leading to changes in five key areas:

- **Less dispatchable generation**
- **More asynchronous generation**
- **More variable sources of generation**
- **Generation moving to different areas**
- **More variable and intelligent demand**

## Decarbonisation Impact: System Operation

The ESO will require flexibility to ensure system security and minimise costs to the end consumer as we continue to decarbonise. With a reduction in the number of flexible carbon emitting plants on the network, and an increase in inflexible, variable, low carbon generation (such a wind), we will see an increasing need for **flexibility for national energy balancing purposes**.

Additionally, there will be a requirement for **locational ESO and DNO/DSO flexibility** services, to shift the energy necessary to manage transmission and distribution network constraints. This will become increasingly important as we see higher volumes of generation connecting to both transmission and distribution networks in highly congested areas.

## Decarbonisation Impact: Energy Sector

The energy industry, including market participants and policy makers, are making changes to **deliver more flexibility** through a **variety of technologies and resources**, including DER and CER, to meet these changing system needs. Market arrangements and policy are currently not incentivising the flexibility required to manage a net zero system. Going forward, there is a need to ensure **flexibility markets are inclusive and efficient**, providing a **level playing field** for all participants to **incentivise the flexibility** required.

# Flexibility Landscape and Needs

Understanding the diverse spectrum of our stakeholders and their unique flexibility requirements is pivotal for crafting comprehensive solutions that address their varied needs. The diagram below captures the expected needs of individual stakeholders.

## Flex Providers

- Clear future GB strategy
- Standardised procurement processes and low entry costs
- Markets aligned to supplier assets e.g. NHH metering
- No barriers e.g. stacking

## Investors & Developers

- Clear future GB strategy
- Predictable revenues
- Locational and temporal guidance
- Connections

## Retailers and Consumers

- Clear future GB strategy
- Markets aligned to consumers' needs
- Markets aligned to customer needs
- Asset independent markets
- No barriers e.g. stacking


## Government & Regulators

- Clear future GB strategy
- Visibly active market
- Lowest costs to consumers
- Inclusion of all consumers
- Net Zero targets
- Transparency and governance

## Experts & Consultants

- Clear future GB strategy
- Open data and metrics

## Platforms

- Clear future GB strategy
- Active market
- Markets aligned to supplier assets e.g. NHH metering
- No barriers e.g. stacking
- No minimum requirements

## System Operators

- Clear future GB strategy
- Active market = liquidity
- Markets aligned to operator needs
- Lowest cost
- Locational and temporal

Logos are indicative only and do not include all the organisations currently active in this space.

# ESO Flexibility Requirements

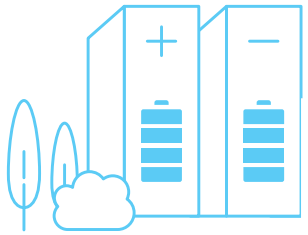
Our flexibility requirements are necessary to ensure we can operate the system securely, especially as we transition to a zero carbon system; more details on system requirements can be found in the Operability Strategy Report (OSR). We want to provide stakeholders with a clear understanding of operational needs to enable the effective participation of flexibility resources in the energy market, helping fulfil our locational and non-locational flexibility requirements.

## Flexibility for Frequency:

Managing imbalances second by second, mainly for access in real-time

*< 30 mins duration*

**Frequency**: flexibility for access in real-time, for a duration of 30 mins or less
**Potential Purpose:** energy balancing, post-fault containment, steady-state frequency regulation etc
**Expected Capability**: e.g. high-speed assets or assets controlled via ESO/DSO



## Within-Day Flexibility:

Managing daily peaks and troughs in supply and demand, lasting several hours in duration

*< 24 hours duration*

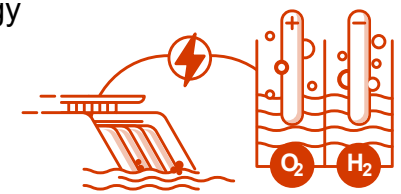
**Within-Day Flexibility:** flexibility for delivery within-day, for a duration of 24 hours or less
**Potential Purpose:** energy balancing, DNO flexibility services, transmission constraint management etc
**Expected Capability:** e.g. time-duration limited assets, aggregated assets, consumer flexibility

## Flexibility for Adequacy:

Managing periods of over and under supply from renewables lasting for days, weeks and months

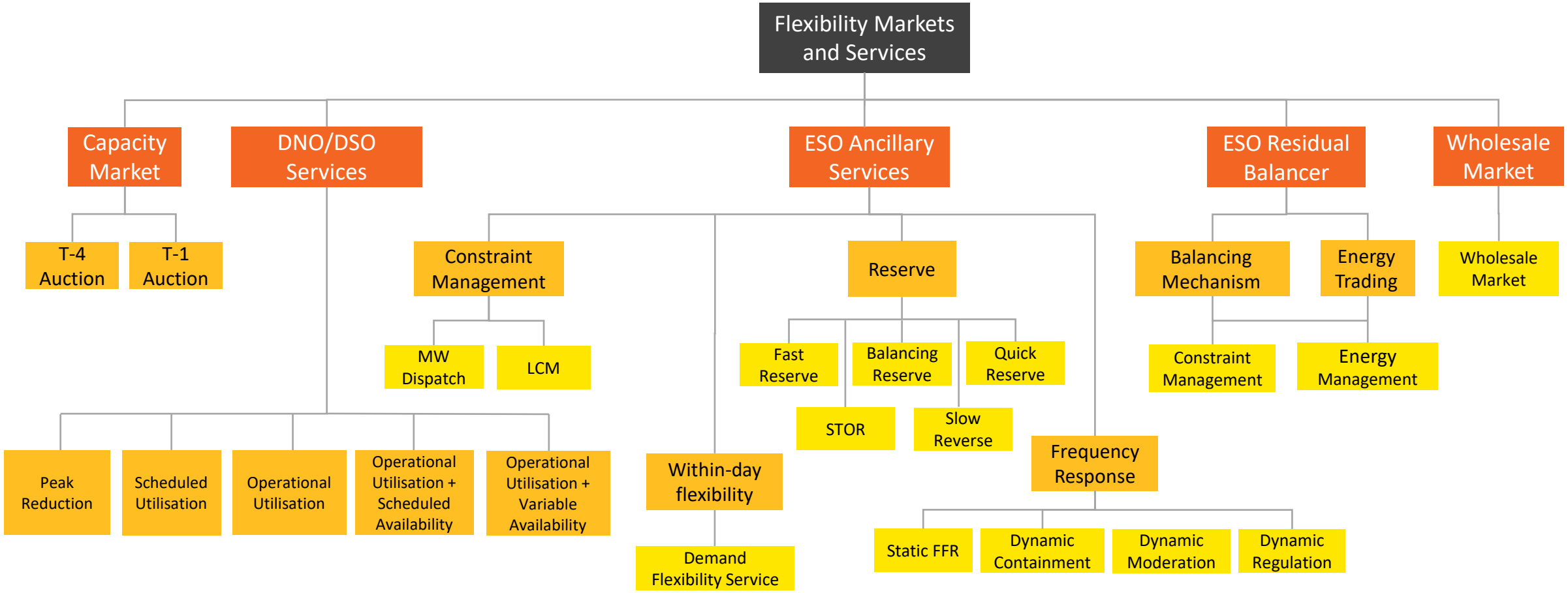
*> 24 hours duration*

**Adequacy:** flexibility for delivery over days, months, years, for a duration of 24 hours or more
**Potential Purpose:** energy balancing for prolonged periods of oversupply, energy balancing for prolonged periods of under-supply, long-duration active constraint management etc
**Expected Capability:** e.g. very long duration storage or assets with another source of energy



# Flexibility Markets

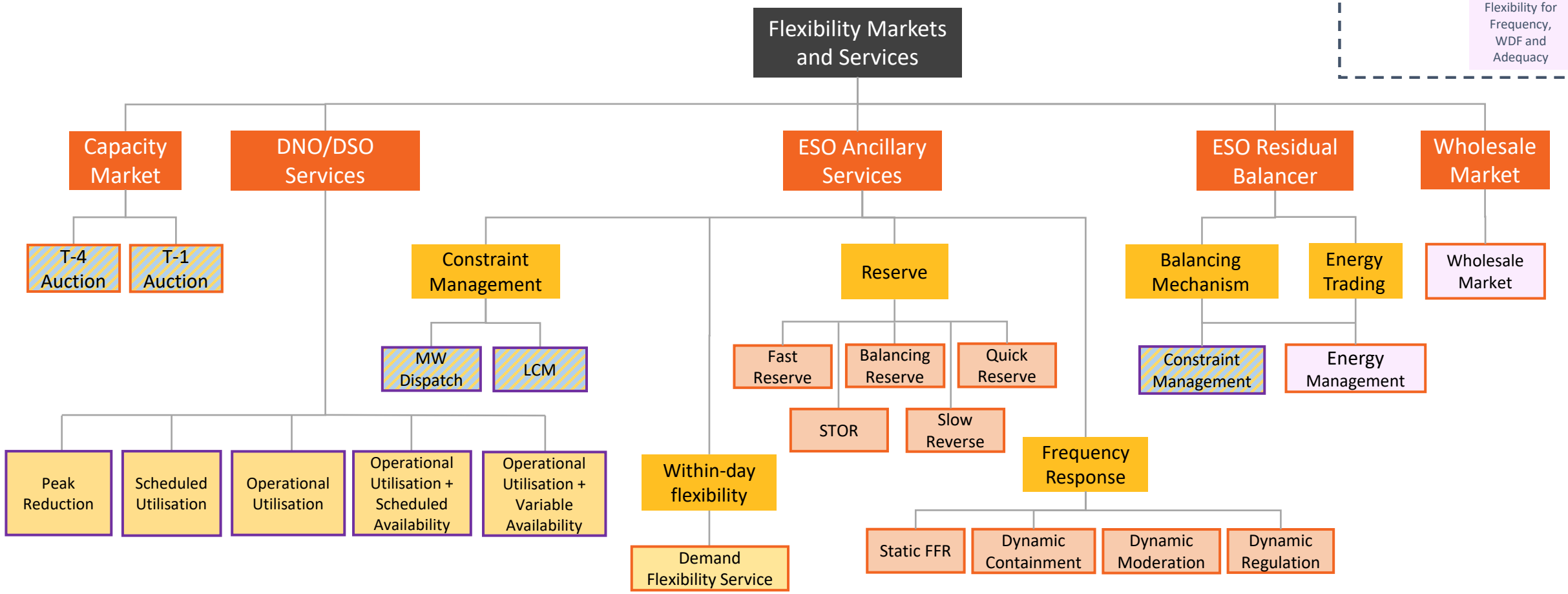
This is a representation of **current GB flexibility markets and services**, referring to all markets and services that enable the shift in consumption or generation of energy. Our strategy focuses of achieving the vision of **enabling flexibility to move seamlessly between markets.** To enable this vision, we will consider the interaction between markets and services the ESO is accountable for, as well as carefully considering the markets and services Flexibility Service Providers participate in which the ESO is not accountable for, such as DNO/DSO markets and the wholesale market.




Markets and services **not shown** on this slide are **out of scope** for this Flexibility Strategy as their **primary focus** is not related to enabling the consumption or generation of energy.

# Flexibility Markets and Requirements

The flexibility system requirements, both locational and non-locational, will be met through a host of different flexibility markets and services. Our strategy will consider the interactions between ESO and non-ESO services, and how the system requirements for Frequency, Within-Day Flexibility and Adequacy can be met through different flexibility markets. The colours highlight the expected interaction between flexibility markets and the system requirements.

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