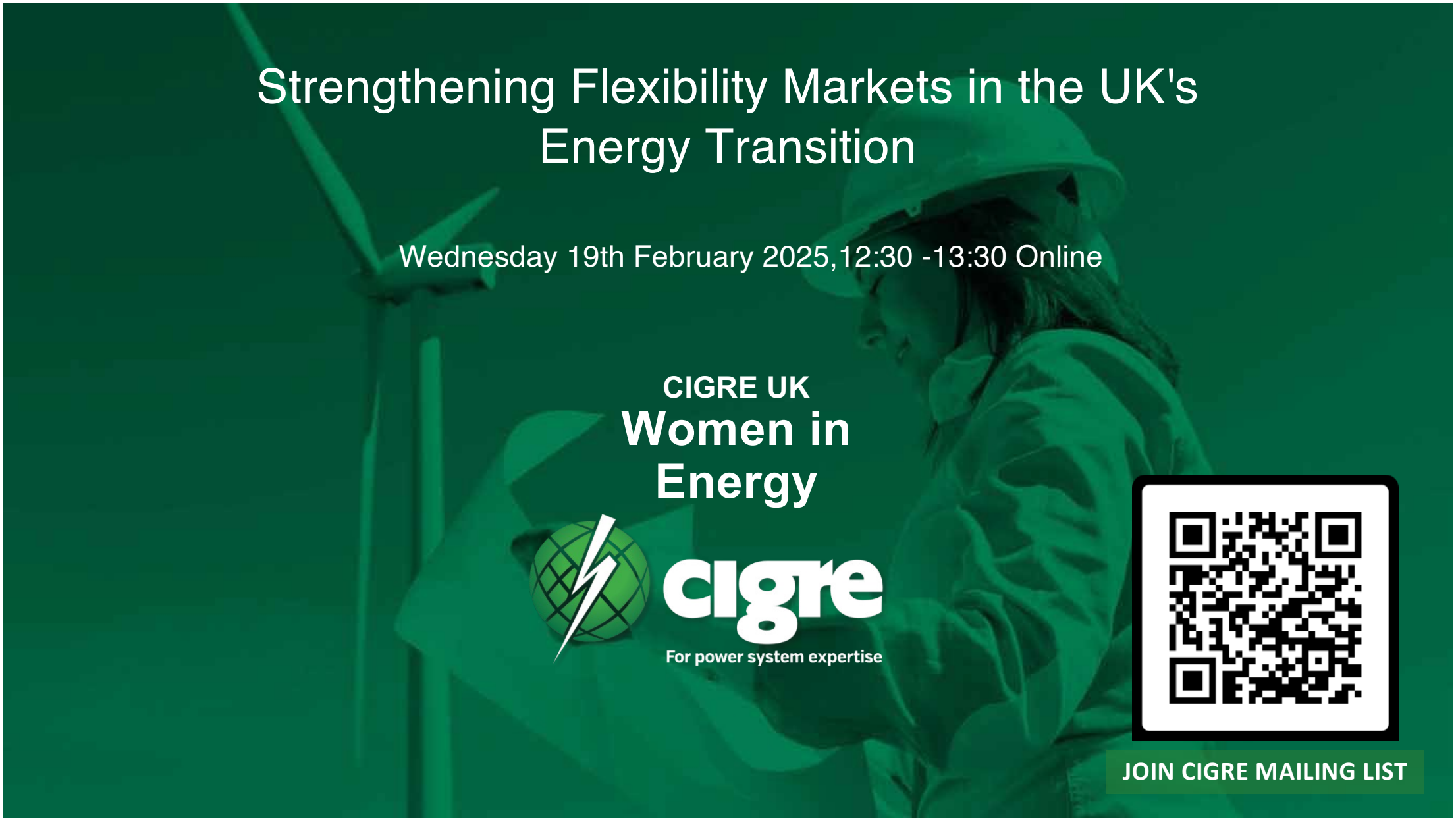
Strengthening Flexibility Markets in the UK's Energy Transition
Wednesday 19th February 2025,12:30 -13:30 Online
CIGRE UK
Women in Energy
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For power system expertise
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# Vision and Mission WiE CIGRE UK

## Vision:

**To inspire women to have a valued career and showcase their full potential in the UK Energy Sector**

## Mission:

1. Actively address barriers to women achieving their full potential and strengthen our allies

2. Enable and promote the participation, contribution of women to the CIGRE technical working groups and showcasing their potential

3. Create a supportive community that fosters networking opportunities, advocacy and growth of women in energy sector

## Strengthening Flexibility Markets in the UK's Energy Transition

**Dr. Avinash Aithal, Head of Open Networks, ENA**

The UK’s journey of establishing a fully integrated local flexibility market

**Nicolas Manea, Distributed Flexibility Strategy Lead, NESO**

Enabling revenue stacking in NESO and DSO markets

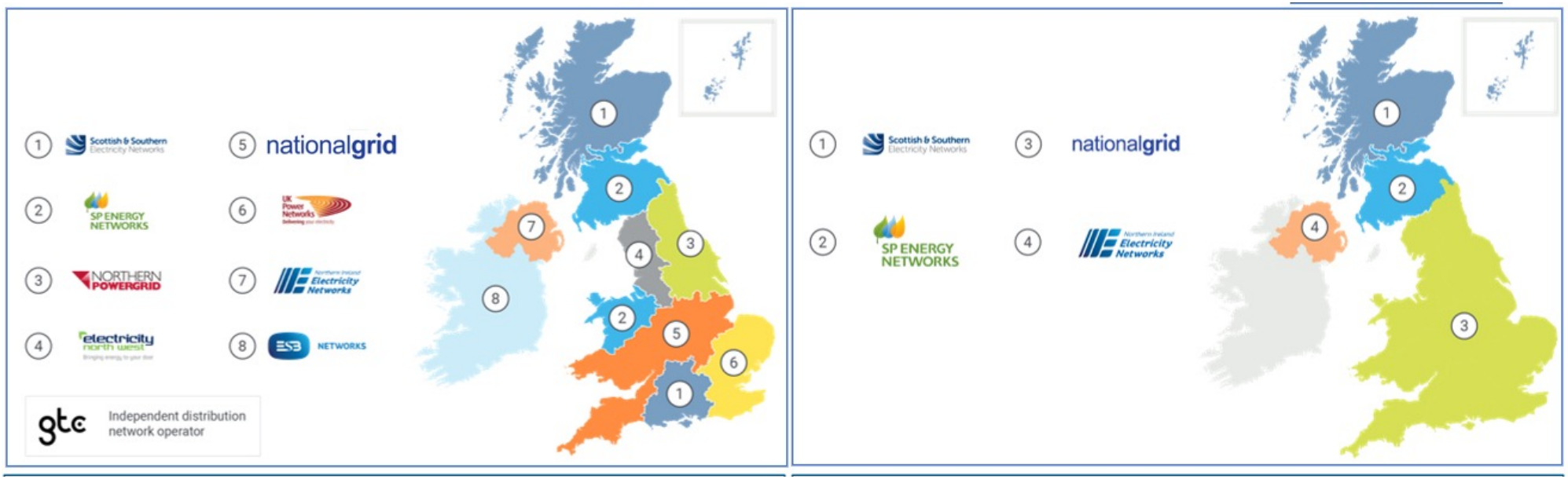
# The UK's journey of establishing a fully integrated local flexibility market

## ENA Open Networks

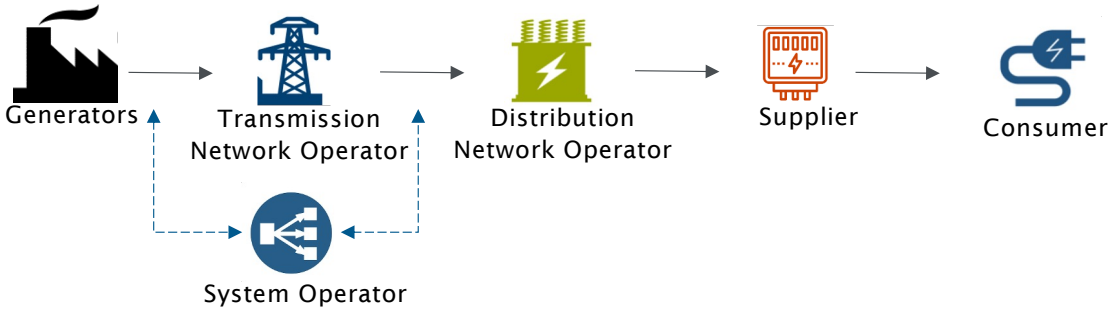
Dr Avinash Aithal,

CIGRE UK Women in Energy Technical webinar
19th Feb 2025

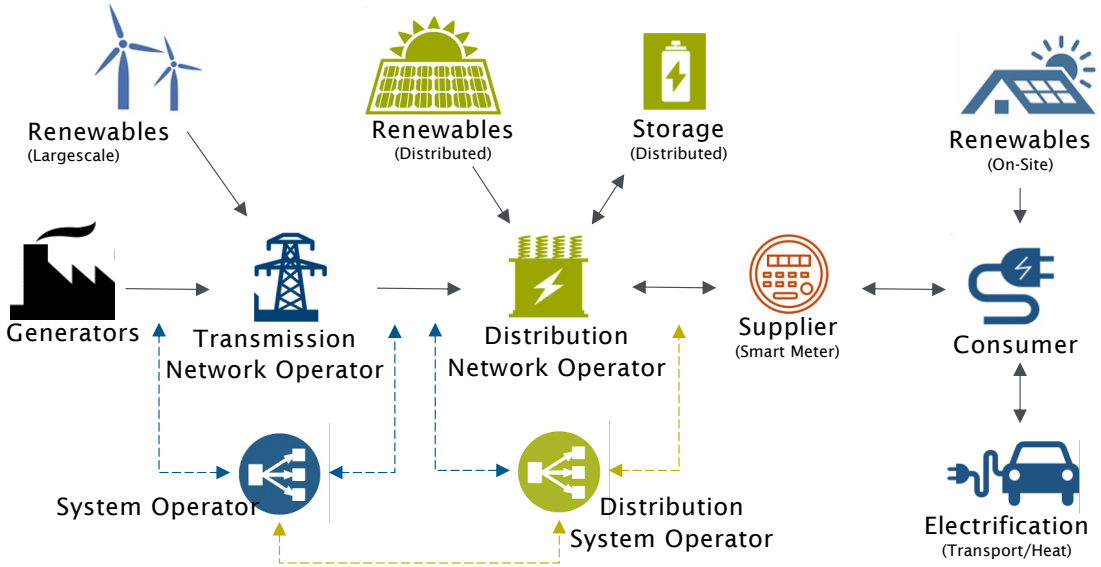
# Introduction to ENA- The voice of the networks



# Key Challenges




**Traditional Power System**




**Evolving, Smart, Flexible Energy System**

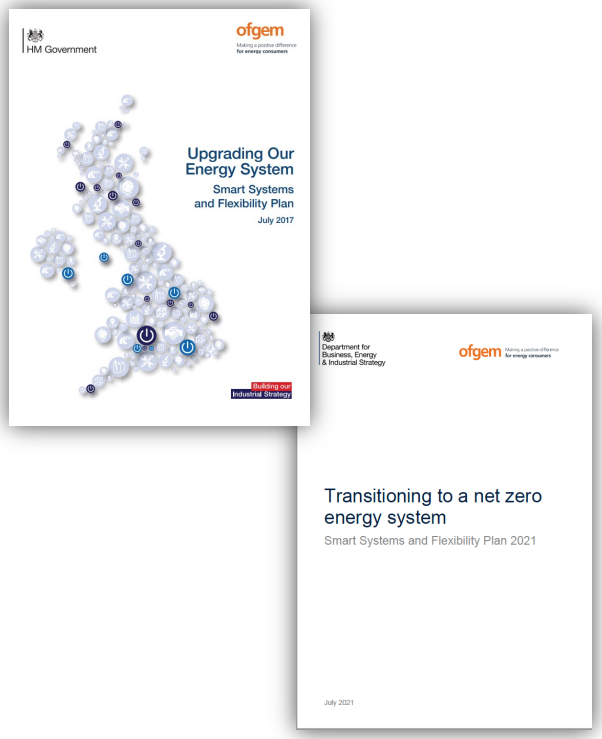
| Future Grid challenges |
|---|
| Optimal use of Network |
| Co-ordination between T-D |
| Connection of new customers |
| Transition to Distribution System Operation |
| Whole energy system operation |

# Open Networks

**Started in 2017, the Open Networks programme is working with the networks and industry to lead the transition to a smart and flexible energy system that will enable net zero.**

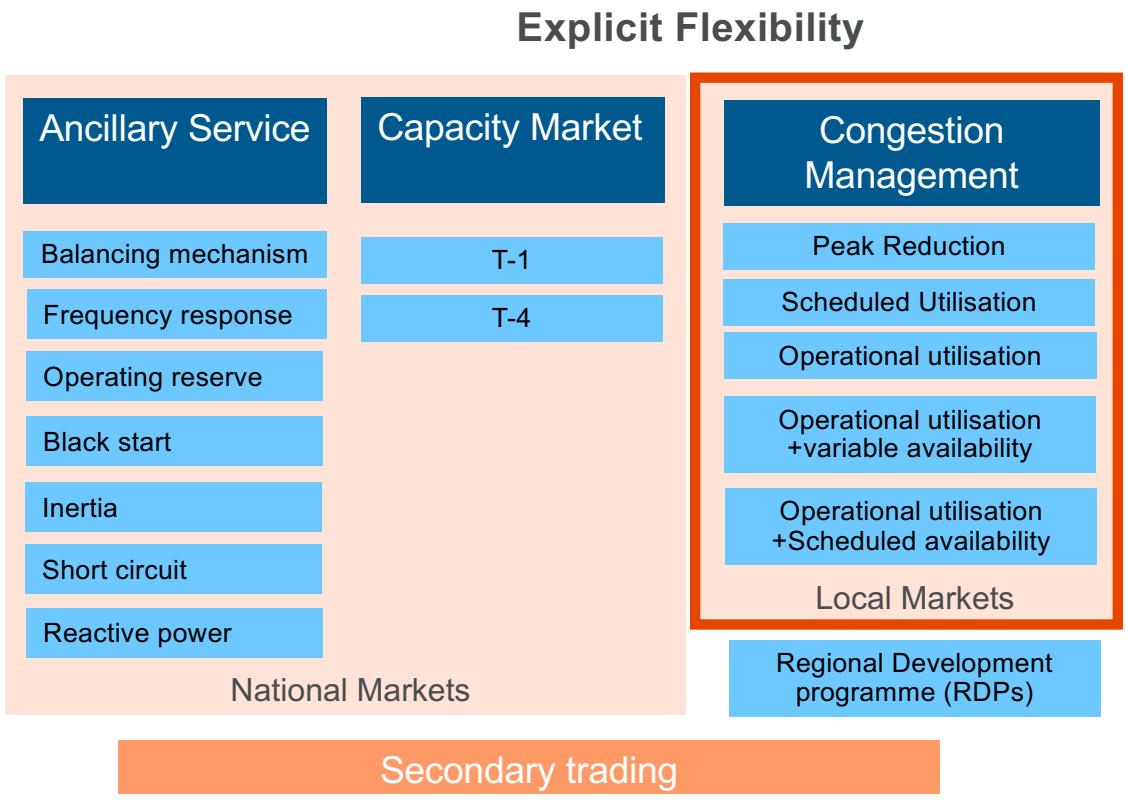
- Key drivers
  - Net Zero mandate
  - Smart Systems & Flexibility Plan
  - Stakeholder feedback
  - Ofgem, DESNZ & Steering Group input

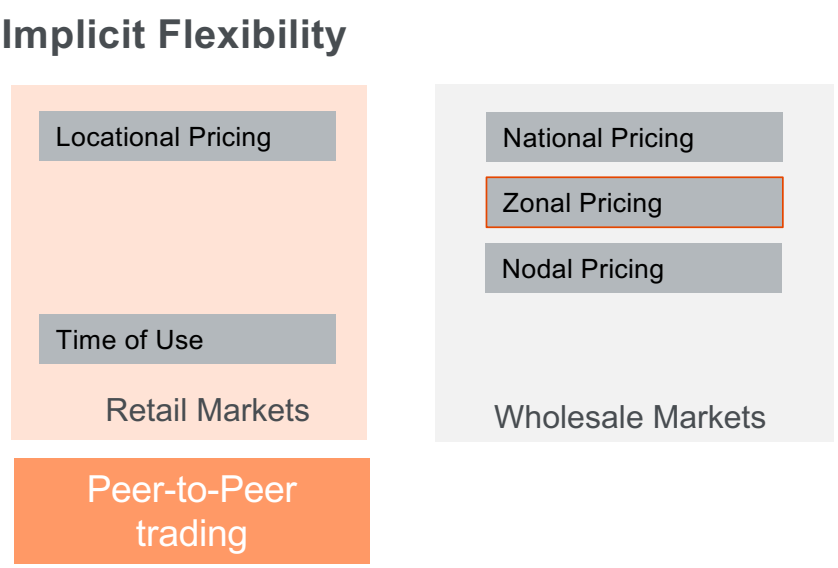
- ✓ Informing the transition to Distribution System operation
- ✓ Opening local flexibility markets to demand response and renewable energy
- ✓ Helping customers connect faster
- ✓ Opening data to enable customers to identify best locations to invest
- ✓ Delivering efficiencies between network companies to operate secure and efficient networks



# Flexibility Markets in Great Britain

- **Flexibility is about renumerating a change in where or when electricity is consumed or generated**

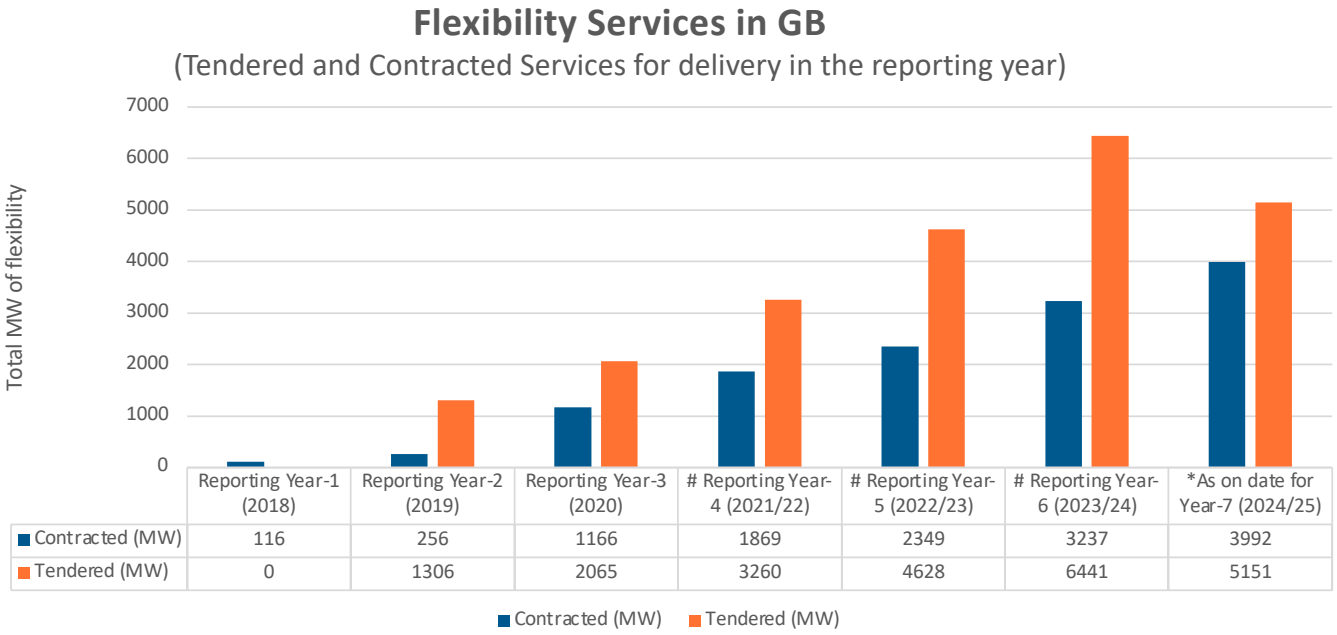


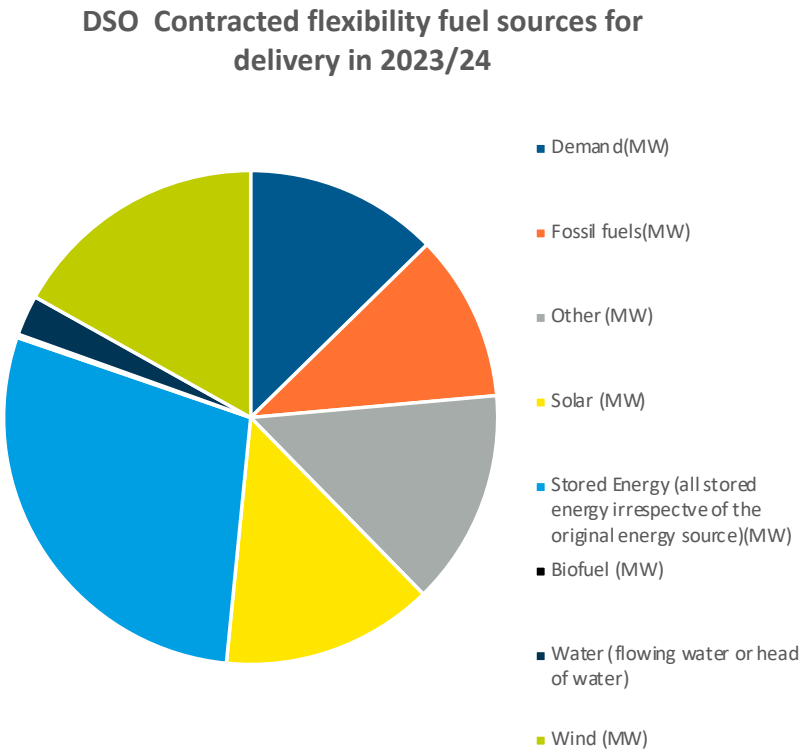

- Open Networks is facilitating the development of local markets and looking at their interaction with national markets.
- GB energy regulator is leading reforms to improve implicit (price driven) flexibility.

# Flexibility state of play – Flex figures

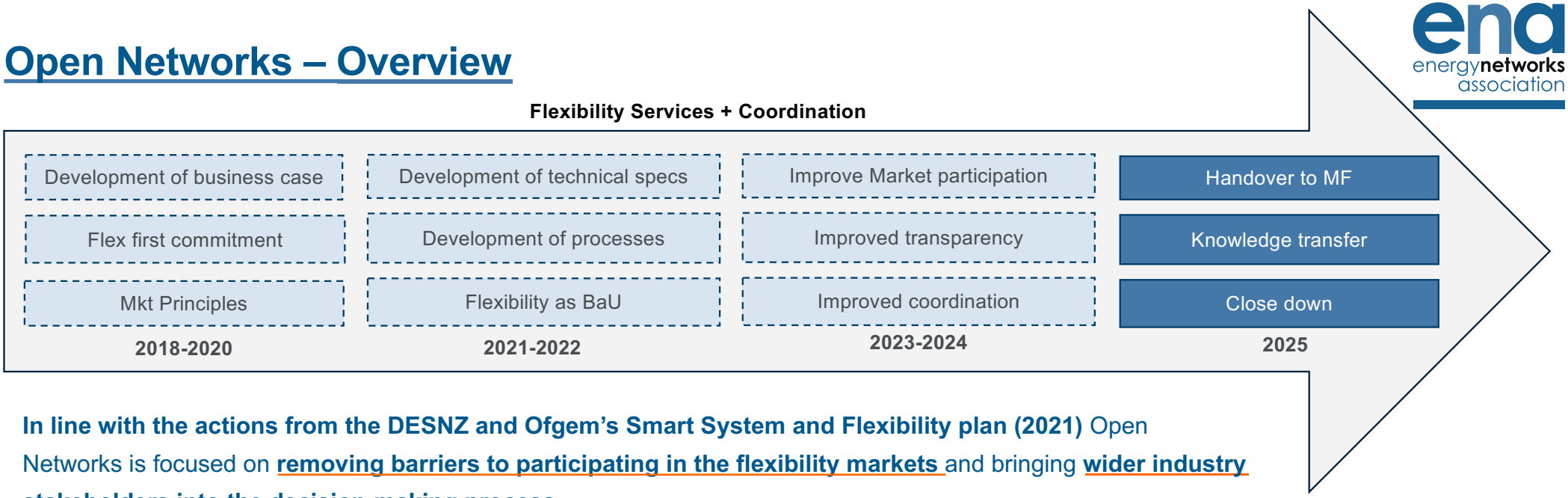
**Objective:** Open Networks will be to increase participation and volume in the local flexibility market.




| | Reporting Year-1 (2018) | Reporting Year-2 (2019) | Reporting Year-3 (2020) | # Reporting Year-4 (2021/22) | # Reporting Year-5 (2022/23) | # Reporting Year-6 (2023/24) | *As on date for Year-7 (2024/25) |
|---|---|---|---|---|---|---|---|
| Contracted (MW) | 116 | 256 | 1166 | 1869 | 2349 | 3237 | 3992 |
| Tendered (MW) | 0 | 1306 | 2065 | 3260 | 4628 | 6441 | 5151 |



# Open Networks – Overview

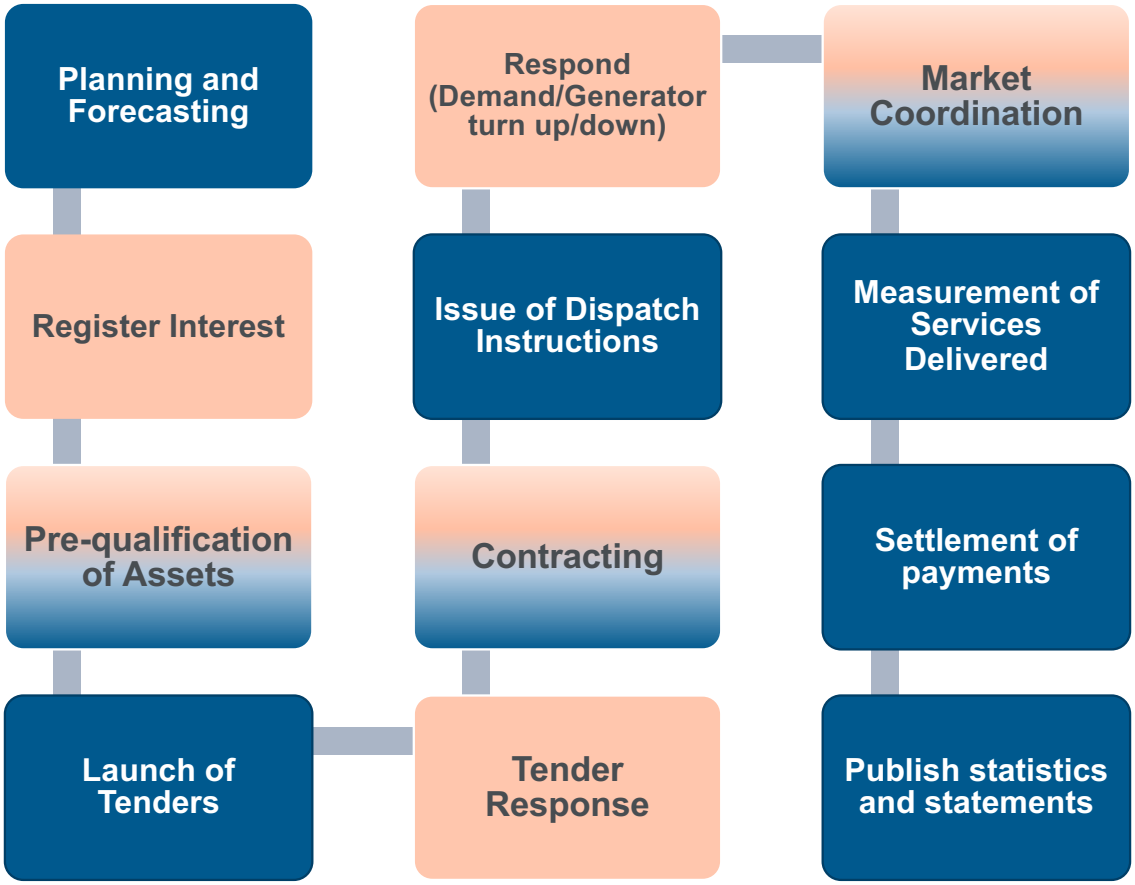



**In line with the actions from the DESNZ and Ofgem's Smart System and Flexibility plan (2021)** Open Networks is focused on **removing barriers to participating in the flexibility markets** and bringing **wider industry stakeholders into the decision-making process**.

**Objective: Open Networks has been to increase participation and volume in the local flexibility market.**

- Making it easier for flexibility service providers to participate in the flexibility market by standardising products, processes and contracts,
- Improving operational coordination between networks and companies to remove barriers to dispatch of services,
- Putting in measures to improve transparency of processes and decision-making.

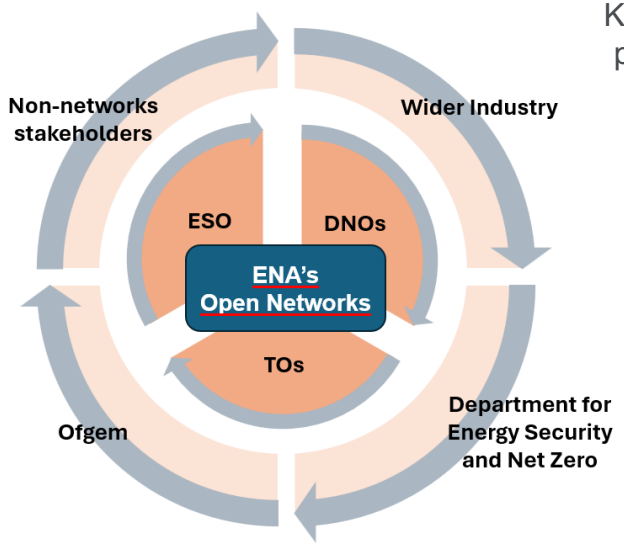
# Overview of outcomes

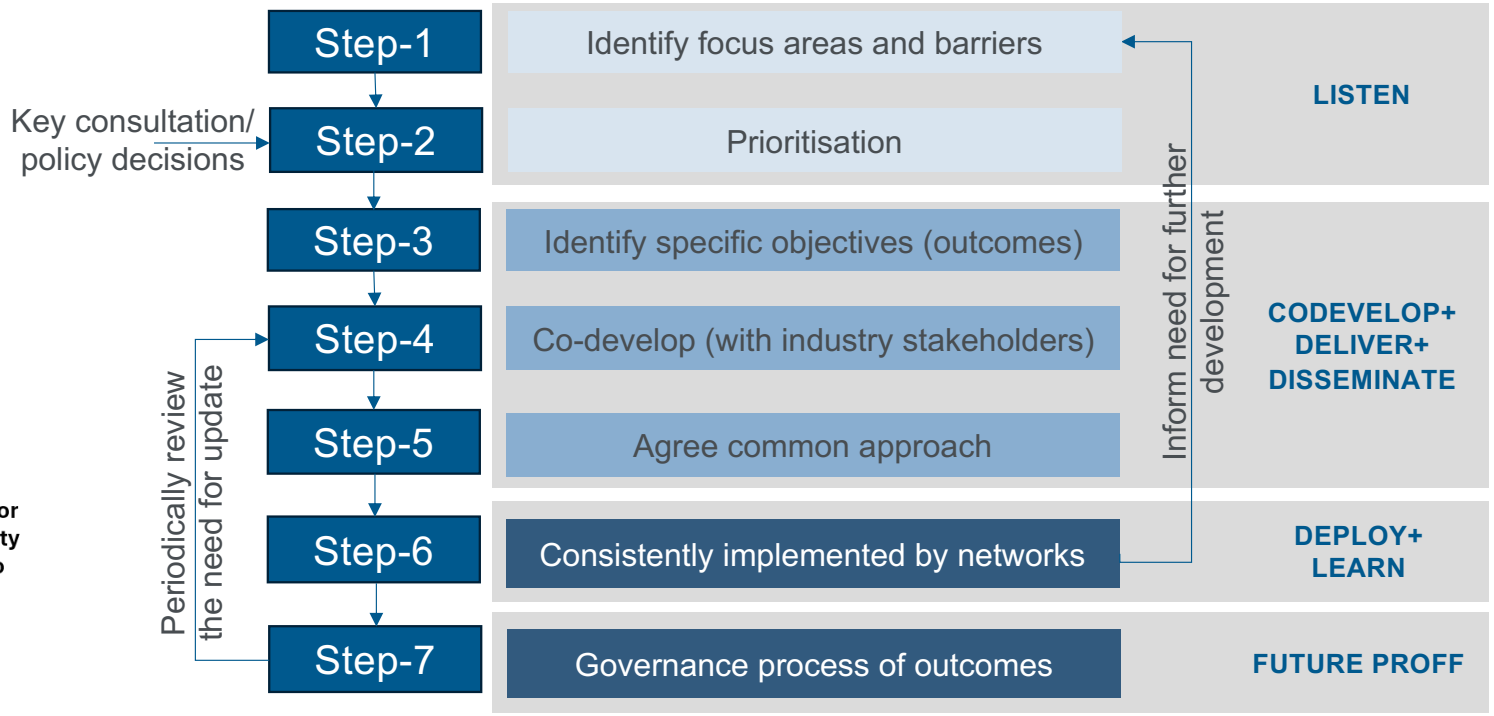



DSO Distribution System Operator

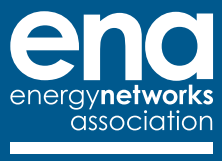
FSP Flexibility Service Provider

# Open Networks- Our delivery approach




Delivered through technical working groups, that have **120 subject matter experts from 8 network companies**, supported by over 400 wider industry stakeholders. This includes **20 key sector representatives through the challenge group**, **80 industry practitioners helping us shape our outputs via focus groups** and over **100 national and international delegates** feeding into the development of the programme **via our insights forum**

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**The voice of the networks**

# Enabling revenue stacking in NESO and DSO markets

- Why is stacking important?
- What is revenue stacking?
- Design principles for stacking
- What is being done to improve revenue stacking?

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National Energy System Operator

# Who am I?

**Nicolas Manea**
Distributed Flexibility Strategy Lead

## Enabling Demand Side Flexibility in NESO Markets

This publication is a response to the urgent need to mobilise demand side flexibility in NESO markets as GB shifts towards a greener future

## Background in consultancy & academia

- Flexibility markets, digitalisation, due diligence
- Ph.D. Cardiff University on blockchain applications for the energy sector

## Leading NESO's market strategy on NESO-DNO coordination

- Market facilitator
- End to end flexibility market design
- Market operation and planning

## Energy Institute YPN Vice Chair SWSW Region

- Events
- Public engagements

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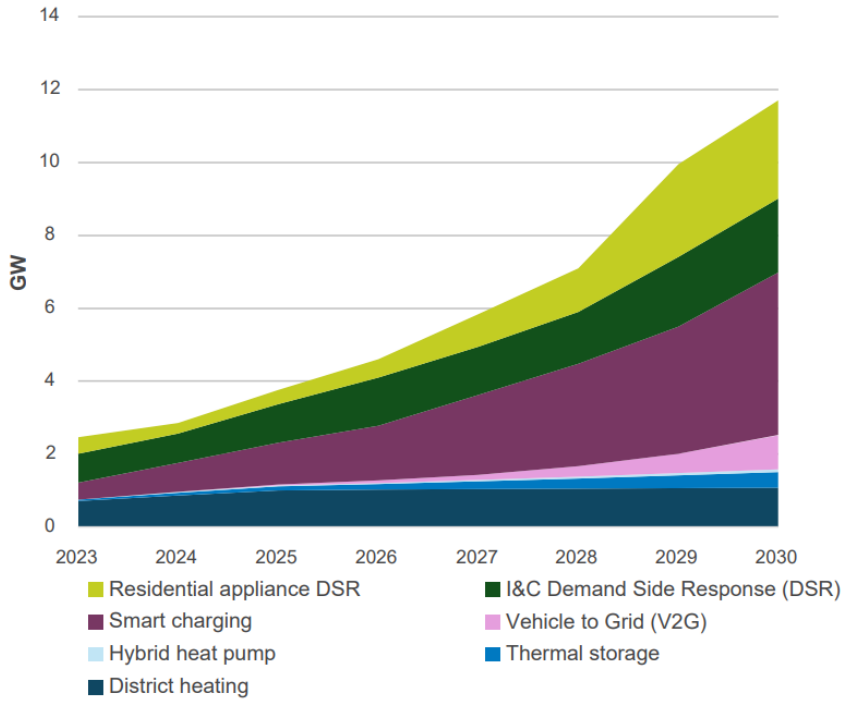
# Let’s talk about the future…

To manage our future grid, we need to increase our levels of distribution and transmission flexibility due to:

- Rise in weather-dependent generation
- Variations in demand
- Increased electrification




***Demand flexibility at peak in Further Flex and Renewables pathway, NESO CP30 Report***

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# Revenue Stacking

Revenue stacking is defined as where **a single flexible asset participates in multiple markets, to maximise its value to the energy system and revenue.**

In the flexibility marker user journey, stacking sits at the procurement level *(and primacy at dispatch)*

Fundamentally, stacking is composed of the following subtypes:

| | **Co-delivery** | **Splitting** | **Jumping** |
|---|---|---|---|
| Asset | Same | Same | Same |
| Capacity | Same | Different | Same / Different |
| Time | Same | Same | Different |
| Direction | Same | Same / Different | Same / Different |

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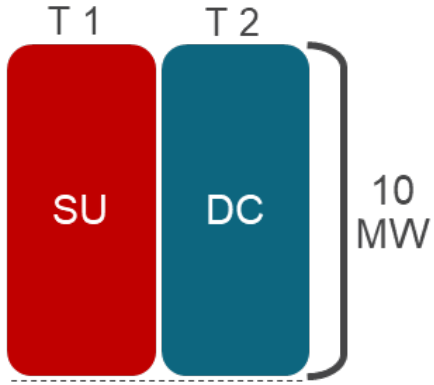
# Jumping

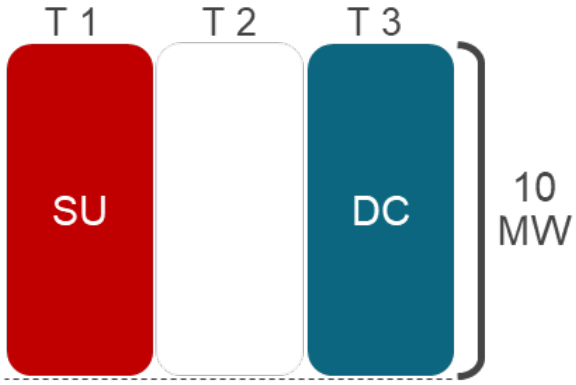
A single asset being paid multiple revenues from the same/different capacity, in different times (adjacent or non-adjacent).

**Adjacent**: Dynamic Containment and Scheduled Utilisation




Providing services in adjacent time periods. In this case DC and SU

**Non-adjacent**: Dynamic Containment and Scheduled Utilisation




Providing services in time periods that are not adjacent.

*T = Time | DC = Dynamic Containment | SU = Scheduled Utilisation*

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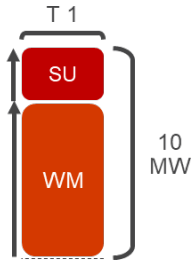
# Splitting

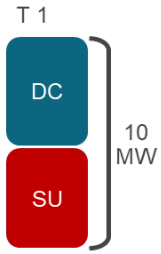
A single asset being paid multiple revenues using different capacity , at the same time.

The **Wholesale Market** and **Scheduled Utilisation**



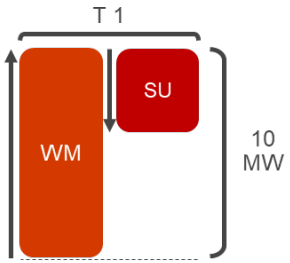

Adding revenue streams to a wholesale market position. In this case, adding positive SU on to WM.

**Scheduled Utilisation** and **Dynamic Containment**



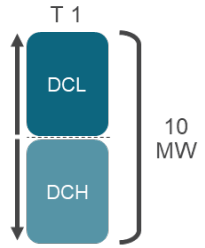

Using part of the capacity to provide one service and the rest to provide another service, in this case SU and DC.

The **Wholesale Market** and **Scheduled Utilisation**



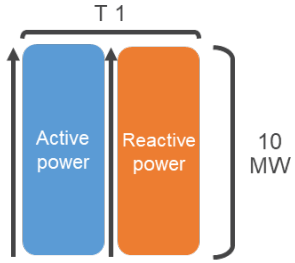

Adding revenue streams to a wholesale market position. In this case, adding negative SU on to WM.

**Dynamic Containment high** and **Dynamic Containment low**




Delivering high and low services at the same time. In this case, DC high and low.

**Active power** and **Reactive power**




It is possible for some technologies to provide active and reactive power simultaneously.

*T = Time | DC = Dynamic Containment | SU = Scheduled Utilisation | WM = Wholesale Market*

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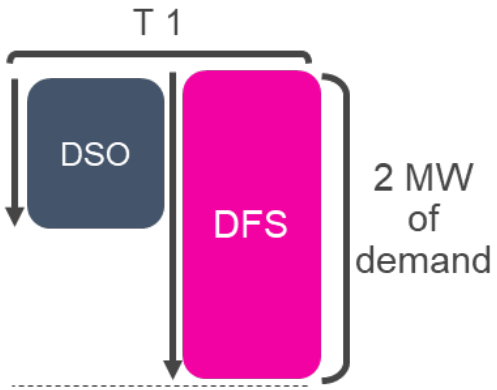
# Co-delivery

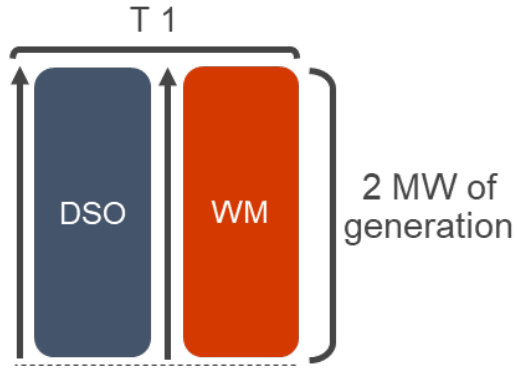
A single asset being paid multiple revenues using the same capacity , at the same time, in the same direction.

**DFS** and a scheduled **DSO service**




Delivering DFS as well as a scheduled DNO service. Overdelivering on the DNO service is likely.

**Wholesale Market** and a scheduled **DSO service**




When participating in scheduled DSO services, providers must trade their DSO utilisation in the Wholesale Market to avoid imbalance cost.

*T = Time | CM = Capacity Market | DC = Dynamic Containment | DNO = Distribution Network Operator | DFS = Demand Flexibility Service*

# How do we ensure that future services will be stackable?

The following features, identified as **common barriers to stacking**, should be avoided wherever practical

1. **Services launched without explicit guidance on stacking**
2. **Use of Exclusivity Clauses**
3. **Carve outs for particular services which cannot be easily updated**
4. **Use of historic baselines without a practical way of adjusting for a wide range of service events**
5. **DSO dispatch after Balancing Mechanism gate-closure**
6. **Long availability windows with no incentive or mechanism to release capacity**
7. **Penalising over-delivery**

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# What do we currently do to improve stacking?

NESO working with the other DNOs within **ENA's ON** and supporting the implementation of the **Market Facilitator** role and functions.

**Recently, we have:**

- Delivered a stacking assessment Excel tool, which is constantly updating.
- Agreed the primacy rules, now we have moved to the implementation stage.
- Removed exclusivity clause from DFS.
- Delivered design principles for stacking.

**In the future, we will:**

- Working to define consistent standards for baselines that allow the unlocking of revenue stacking.
- Agree and decide over the future of co-delivery.

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National Energy System Operator

**Dr. Avinash Aithal, Head of Open Networks, ENA**

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