#R2NZ6

The road to net zero electricity markets
DSO Markets

John Twomey (ESO)
Andy Wainwright (ESO)
Eleanor Horn (ESO)
Sotiris Georgiopoulos (UKPN)
Caroline Sejer Damgaard (ADE)
David Gibbin (Severn Trent)

Agenda

Item	Who?	How long?
Why is the DSO Transition important to the ESO?	ESO	30 mins
DSO Strategy Overview		
Strategy Deep Dives		
Ongoing projects		
Stakeholder presentations	UKPN, ADE, Severn Trent	30 mins
Next Steps	ESO	5 mins
Panel Q&A	All (ESO to compere)	15 mins
Feedback Polls & Wrap Up	ESO	5 mins

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Why is the DSO transition important to the ESO?

A growing number of our service providers are connected to distribution networks.

Zero-carbon system operation has to involve all networks.

Reduced consumer costs:

- More market liquidity
- Distribution solutions for transmission system needs.

We need to co-ordinate the system actions we both take; otherwise we risk conflicts!

Ofgem wants us to take a more active role as a thought leader within the DSO transition.

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ofgem

nationalgridESO

The ESO approach to the DSO transition

- We will be consulting on our approach to the DSO transition shortly, which builds on work already ongoing in the industry

The strategy document consists of;

- A high level strategy
- A proposed vision of how the ESO will be supporting DSO in 2025

Draft High Level Strategy

- We need to support the development of DSO markets that will create new market opportunities and facilitate the transition to Net Zero.
- We don't have an ambition to be a DSO but recognise the need to work with the DSOs.
- Consistent and aligned approaches are required with clear roles & responsibilities.
- Innovative business and technology enablers need to be embraced.

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Network Operation

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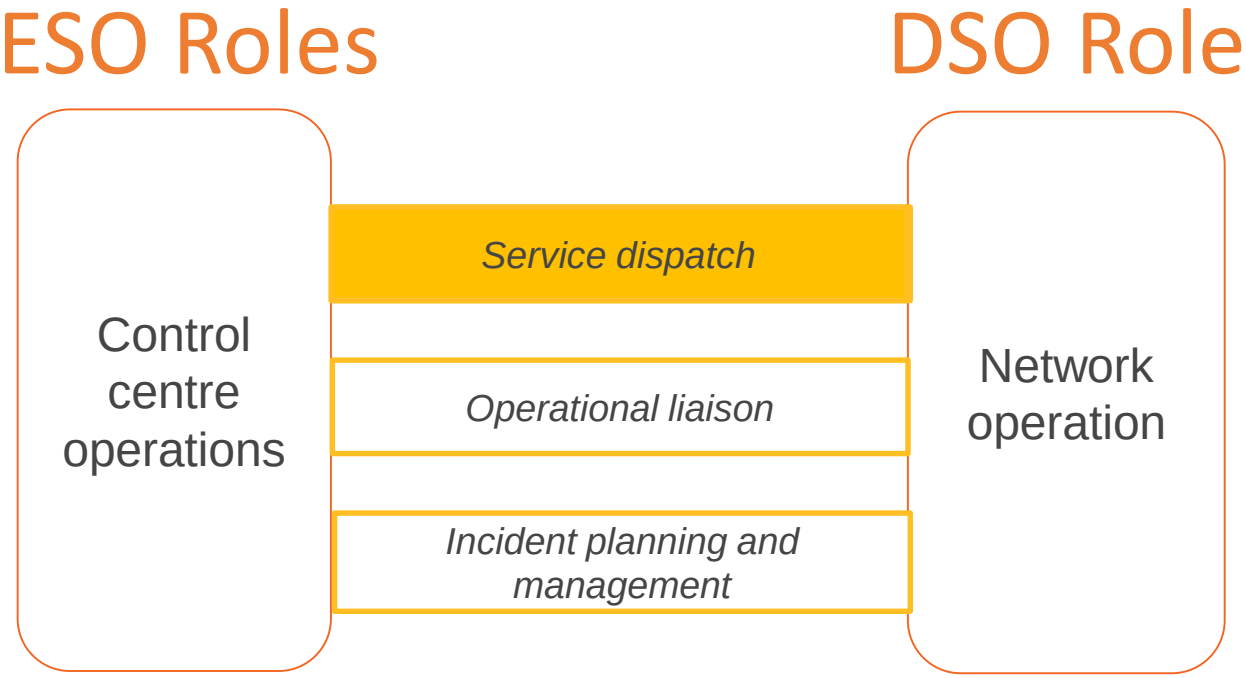
- Each role has within it a number of functions which will require co-ordination and alignment between the ESO and DSOs to maximise value to consumers.



Service Dispatch

- Dispatch co-ordination.
- Dispatch mechanism.

Market Development

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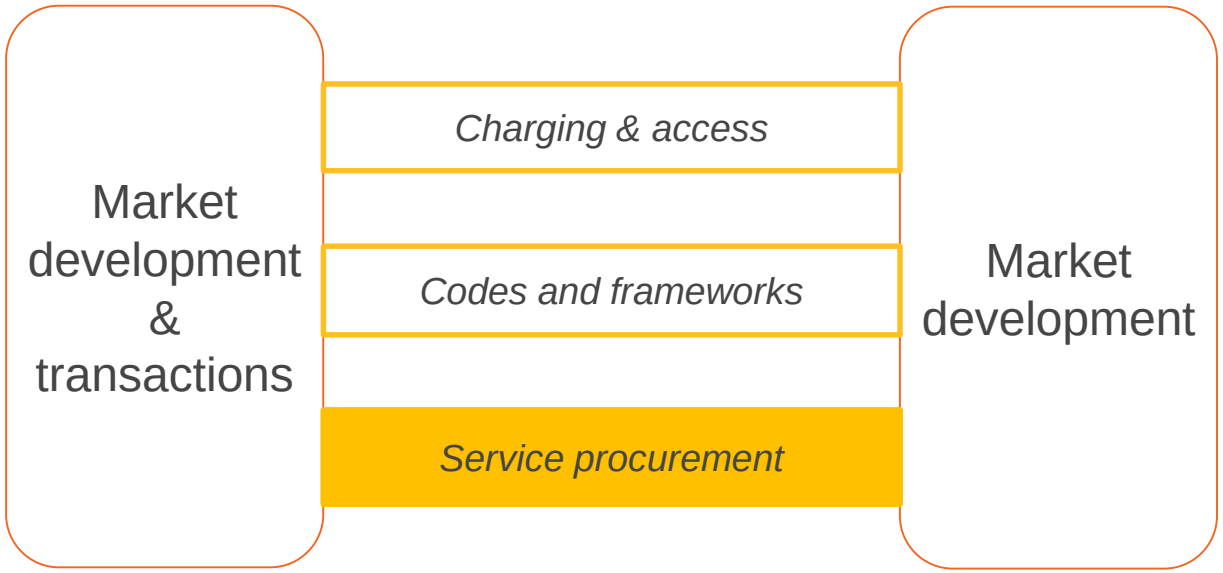

Service Procurement

- Consistent service framework agreements across ESO and DSO markets.
- Explore synchronised procurement rounds for some services.

Planning & Network Development

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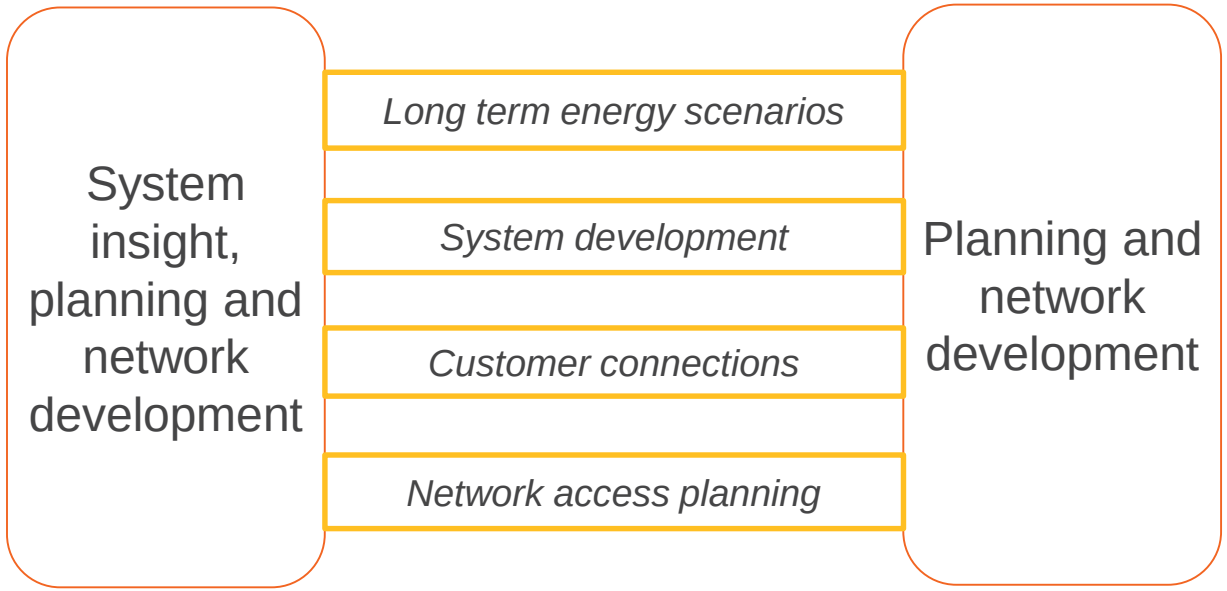
- Each role has within it a number of functions which will require co-ordination and alignment between the ESO and DSOs to maximise value to consumers.

ESO Roles

DSO Roles



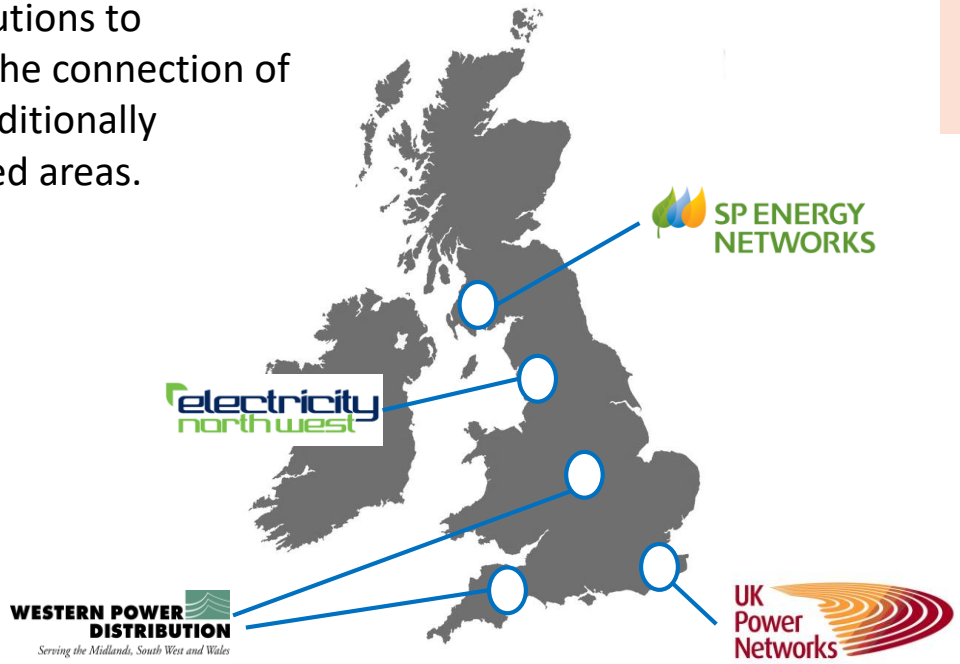
Development

- Identifying future system needs
- Facilitating connection of new parties.
- Planning day to day system requirements

How the ESO is supporting the DSO Transition

Regional Development Programmes (RDPs)

- RDPs are using market based solutions to facilitate the connection of DER in traditionally constrained areas.



Open Networks

The ENA Open Networks project is a collaborative initiative between network organisations.

It seeks to develop a co-ordinated approach to;

- Flexibility markets
- Distribution System Operation (DSO)
- Whole electricity system ways of working

Innovation projects

- Power Potential
- Distributed Restart

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DSO Markets – UKPN's perspective

Sotiris Georgiopoulos

ESO Net Zero Markets Session - 25 March 2021

THE SUNDAY TIMES 25 BEST BIG COMPANIES TO WORK FOR 2020

INVESTORS IN PEOPLE™ We invest in people Platinum

Trustpilot

UK Power Networks Delivering your electricity

DSO markets from vision... **to reality**

2017

Future Smart – our transition to DSO

Flexibility Markets

2018

Flexibility Roadmap – Flexibility First approach

2020 Tender

57 Zones published – 170MW – £27m

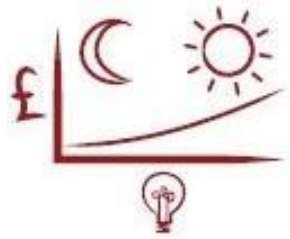
2021 Tender & Introduction of LC31

137 Zones published – 113MW Secure/253MW Dynamic – £50m

Our **Flexibility Principles**

Co-design and accessibility

- **Co-design** new arrangements
- Adoption of **digital platforms**
- **Standardise** to reduce barriers



Market testing

- Open all LR capex at high voltage
- Trials for **EV-driven** constraints

Neutrality & Data Transparency

- **Publish info** on size & location ahead of tenders
- **Publish** tender **framework**, assessment criteria, tender **results**

Open markets – Use technology – Facilitate business models

Maximise available opportunities using economic principles

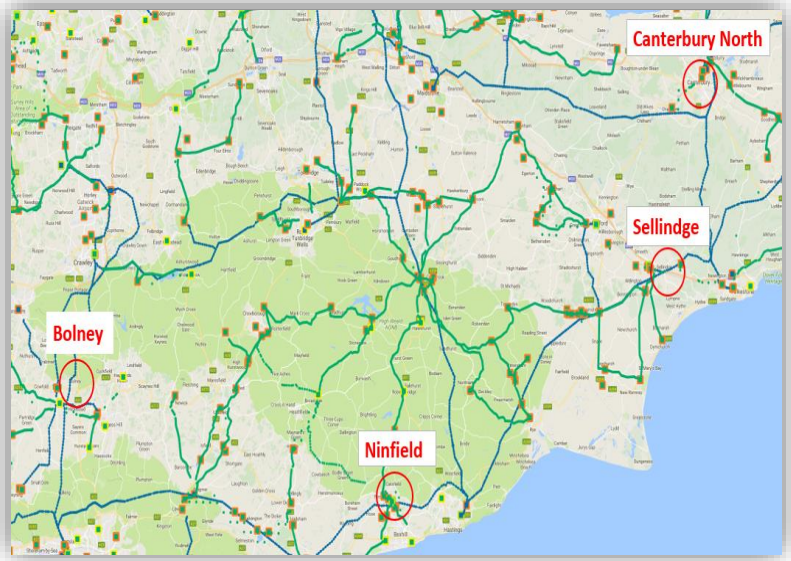
UK Power Networks
Delivering your electricity

Growing portfolio of opportunities for Distributed Energy Resources

Solutions for the Whole System

Power Potential

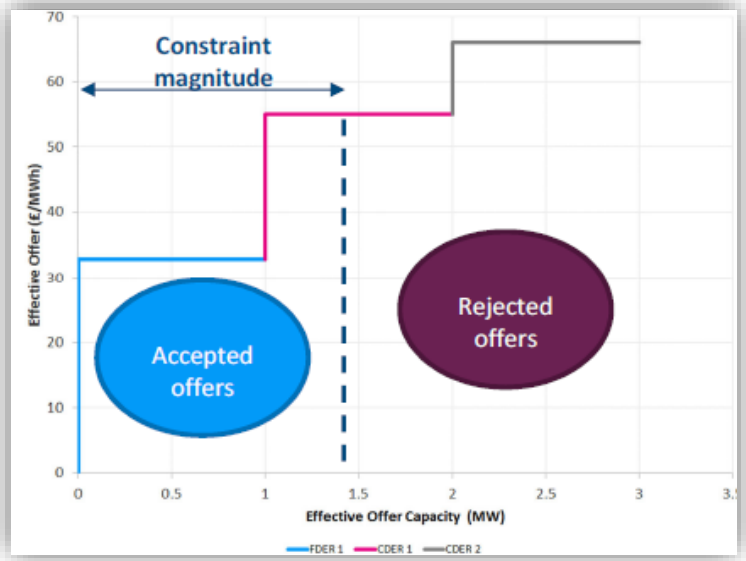
A reactive power market to resolve transmission constraints



Facilitating more renewables

Energy Exchange

Trading of generation curtailment

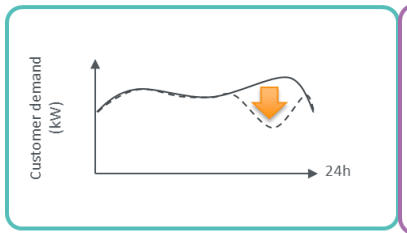


Decarbonising transport

Shift

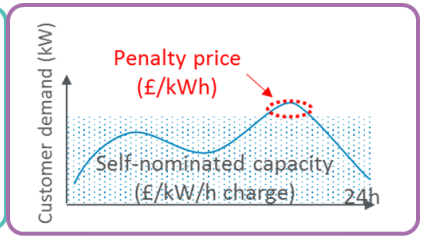
Exploring price signals for retailers and aggregators

Flexibility Procurement



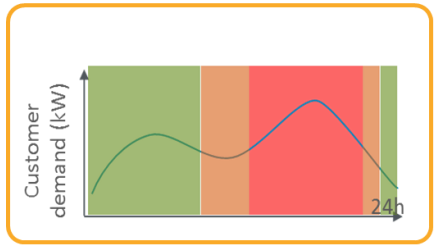
ev.energy

Capacity Based Pricing



octopus energy

DUoS Time of Use



KALUZA AN SSE COMPANY

Whole System — Distribution System

Market trials: **2019-20 >** Interim solution: **2021-23 >** Industry wide solutions: **2023+**

UK Power Networks
Delivering your electricity

Collaborating to deliver open, transparent and neutral flexibility markets through Open Networks

Standard product names adopted

Standard contract introduced

Common evaluation methodology and streamlined procurement processes

Whole systems CBA developed

Conclusions

- DSO markets will be critical to delivering Net Zero at lowest cost

- We are driving rapid growth of DSO markets through:

    - Co-design with participants
    - Transparency of data
    - Adoption of forward looking tech
    - Collaboration & standardisation through Open Networks

> Find out more at
https://smartgrid.ukpowernetworks.co.uk/flexibility-hub/

Email
Sotiris.Georgiopoulos@ukpowernetworks.co.uk
flexibility@ukpowernetworks.co.uk

Thank you

> Find out more at smartgrid.ukpowernetworks.co.uk <

Email
Sotiris.Georgiopoulos@ukpowernetworks.co.uk
flexibility@ukpowernetworks.co.uk

Road to Net Zero Electricity Markets – DSO Markets

25th March 2021

The Association for Decentralised Energy

Combined Heat & Power
Demand Side Services
Energy Efficiency
Heat Networks

Caroline Sejer Damgaard
Researcher | ACE Research

What do DSO markets mean to us?

The Association for Decentralised Energy

Combined Heat & Power
Demand Side Services
Energy Efficiency
Heat Networks

The role of DSO markets

- An essential building block for the smart, zero-carbon system of the future
  - **One** of many services that should be accessible for energy assets
  - Important **alternative** to network reinforcement
  - Critical to support **electrification** of heat & transport
  - Important for the business case of **flexibility**

Enabling the transition (& the role of the ESO)

- Stackability / non-exclusivity across ESO/DSO markets
- Improved data – and data sharing
- Better service prioritisation
- Accessible and automated procurement and dispatch processes
- 'Drag and drop' asset prequalification
- Requirement for detailed market testing prior to reinforcement

- Valuable lessons from the past decade of transformation in the ESO

What are the ADE & our Members doing in this space?

The Association for Decentralised Energy

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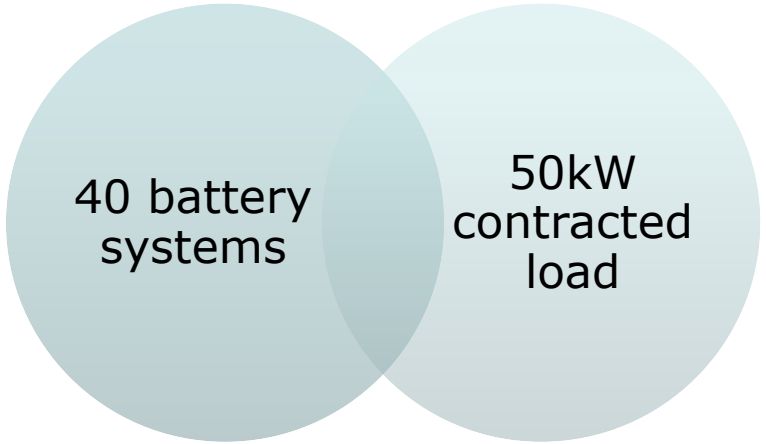
Demand Side Services
Energy Efficiency
Heat Networks

ADE Members' activities

- Kaluza with WPD:
  - **First paid DSO flexibility service using domestic assets**
  - Optimisation of domestic sonnenBatteries storing energy from domestic solar panels
  - Trading live via WPD's Flexible Power interface



ADE Members' activities

- **4D Heat:** Delta-EE, PassivSystems, Everoze
  - Ability of flexible heat demand to absorb excess wind power
  - 540GWh of wind energy could be absorbed by domestic heating across off-gas grid Scotland
    - Saving £24m/yr in wind constraint payments
    - Delivering environmental and social benefits of £2m/yr
    - Household savings of up to 18% on annual energy bills

Many other examples!

- Centrica's **Local Energy Market (LEM)**
  - UK's largest trial of energy flexibility
  - 200 homes and businesses trading stored renewable electricity
  - 310MWh traded – estimated need for flexible trading of 25TWh of electricity per year, to accommodate Government plans on offshore wind
- EDF working with numerous partners on **Project LEO**
  - Smart grid trial aiming to replicate the electricity system of the future, to inform DSO and market developments and the transition to a smart, flexible energy system

Flex Assure – Code of Conduct & Compliance Scheme

- Established by the ADE with support from the ESO, BEIS and Ofgem
- Facilitating trust in the energy flexibility sector
  - Defining minimum standards
  - Promoting best practice

www.flexassure.org

Initial thoughts on the ESO's strategy for the DSO transition

The Association for Decentralised Energy

Combined Heat & Power
Demand Side Services
Energy Efficiency
Heat Networks

Key positive take-aways

- Strong emphasis on **ESO/DSO coordination**
- Focus on the importance of **data**
- Explicit consideration of **automation of dispatch** across ESO/DSOs

Some questions/points for further consideration

- What happens if we look at this in relation to (unlikely but possible) extreme scenarios of centralisation/decentralisation, and the possibility of a more dominant role for either the ESO or DSOs?
- You thought today's markets were complex…
  - Do we need to think further about market structures and levels/dynamics of participation in different markets?
- Who pays for services which may offer benefits at various scales of the system?
- Locationality of assets/portfolios becoming increasingly important – and complex…

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Heat Networks

Thank you!

Caroline Sejer Damgaard
Researcher | ACE Research

caroline.sejer.damgaard@theade.co.uk

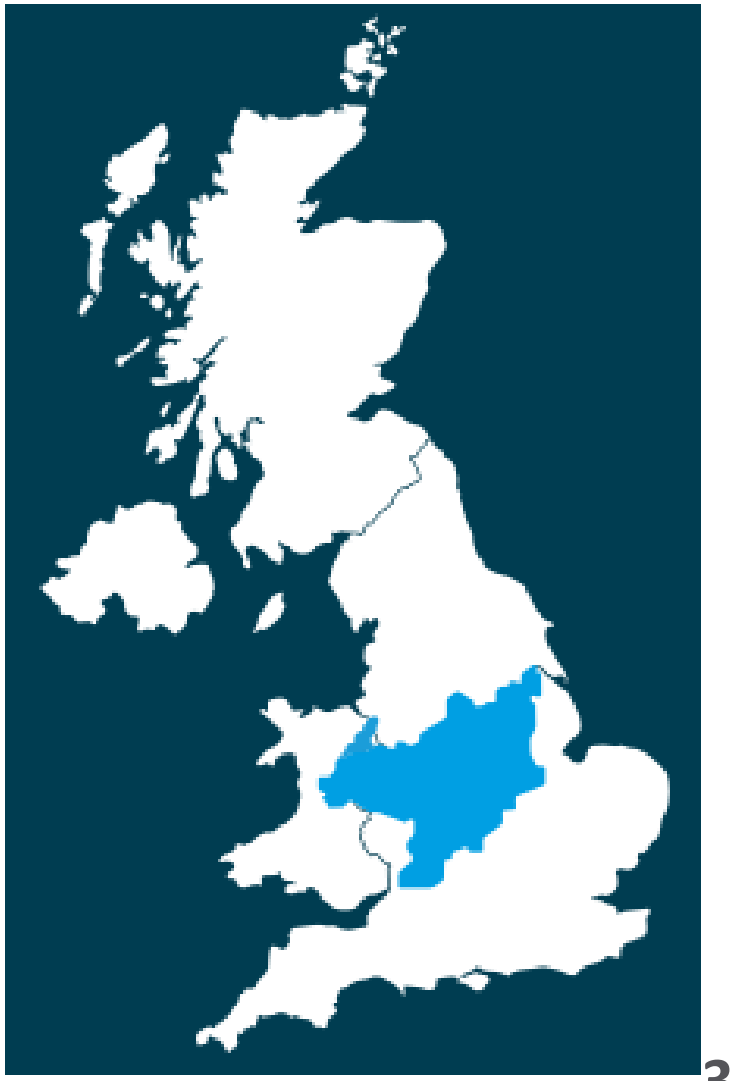
ENERGY FLEXIBILITY AT SEVERN TRENT

David Gibbin, Energy Flexibility Manager

25th March 2021

ENERGY AT SEVERN TRENT

- Two of the 11 regulated water and waste water businesses in England and Wales – **Severn Trent Water** and **Hafren Dyfrdwy**
- Over **6000** operational sites
- **2.0bn** litres of drinking water supplied each day
- **3.2bn** litres of waste water treated each day
- Energy is our **2nd** highest cost
- Electricity imported c.**780GWh** per annum
- Signed up to a triple carbon pledge, that by 2030 we will have:
  - Net zero carbon emissions
  - 100% energy from renewable sources
  - 100% electric fleet



ENERGY FLEXIBILITY AT SEVERN TRENT

- **14MW** of assets participating in balancing and reserve services

- **10MW** of MCPD compliant diesel generators
  - STOR / CM / TRIADs
  - Flexitricity

- **4MW** of operational assets
  - Dynamic FFR / Tariff Management
  - Open Energi

- Installing **352** electric vehicle charging points in 2021
  - Load balancing and tariff management

OPPORTUNITIES AND CHALLENGES MOVING INTO A DSO WORLD

More flexible Connection Agreements

Long term certainty, build confidence in delivering business cases

We have lots of assets spread across a wide geographical area
- What works on one site might not be the case on another

Differing requirements across ESO/DSO products- speed of response, durations

Metering & data standards

Too many markets- where do I bid my asset?

but

More markets lead to more opportunities

We want to support the decarbonisation of the grid by providing as many MWs as possible. But it has to be cost beneficial.

Next Steps

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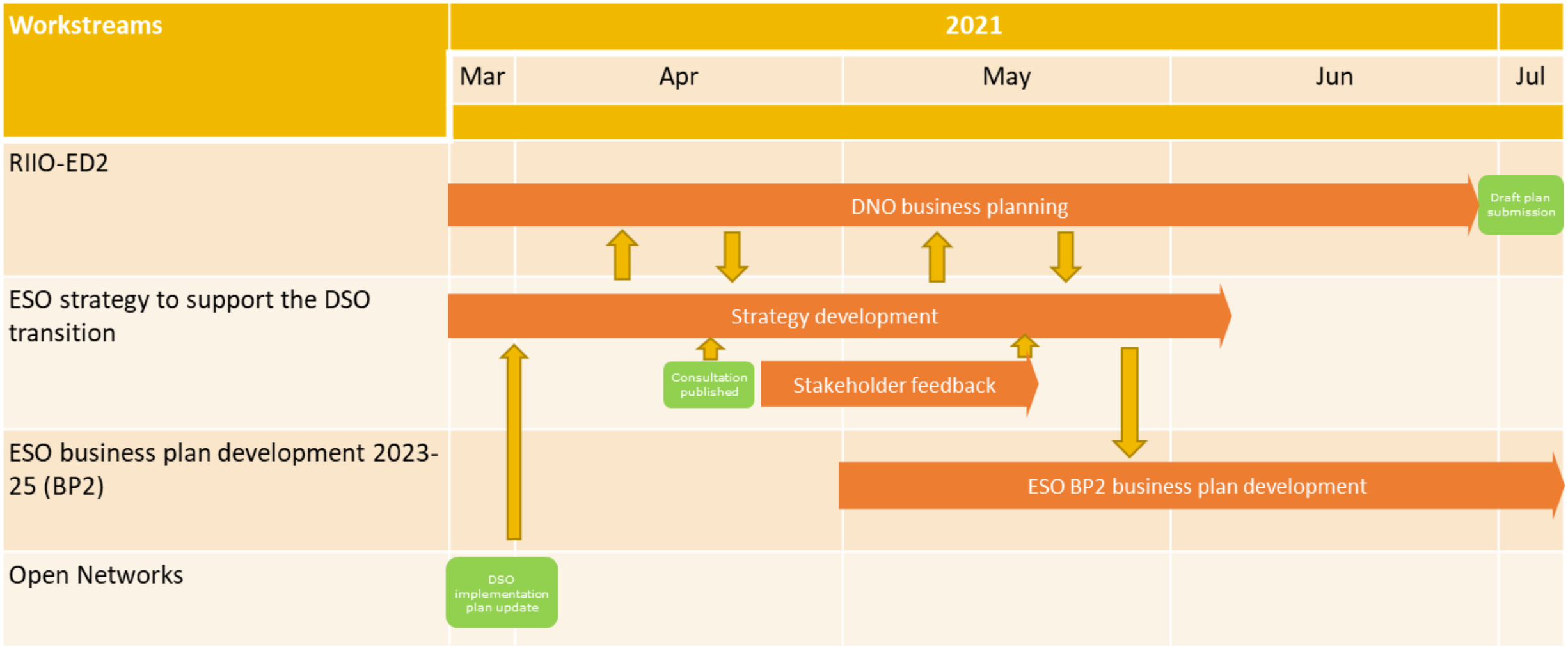

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Q & A

Questions for the stakeholder panel through Slido

The road to net zero electricity markets: other events

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Tuesday 23rd March		*Wednesday 24th March*		*Thursday 25th March*	
10am	*1pm*	*10am*	*1pm*	*10am*	*1pm*
The road to net zero electricity markets launch	**Market reform insights**	**Code change roadmap to 2025**	**Electricity Market Reform: Capacity Market and Contracts for Difference**	**Net zero market design**	**DSO markets**

Are you interested in finding out about how the electricity market is changing and progressing to a zero carbon grid?

The Markets team in the ESO are running a series of interactive, online events in March, where you will be able to take part in focused sessions with subject matter experts on different aspect of electricity market change.

Click here to find out more and register for the events or access the recordings if you can't make the session.

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We’d love to hear what you thought of the event. Please use the slido poll!