DSO

DISTRIBUTION SYSTEM OPERATOR

UK Power Networks DSO: 2 years on

6th May 2025

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Agenda

1	About UK Power Networks
2	Why do we need a DSO?
3	What are the DSO roles?
4	Delivering for customers
5	DSO Key Performance Indicators

DSO

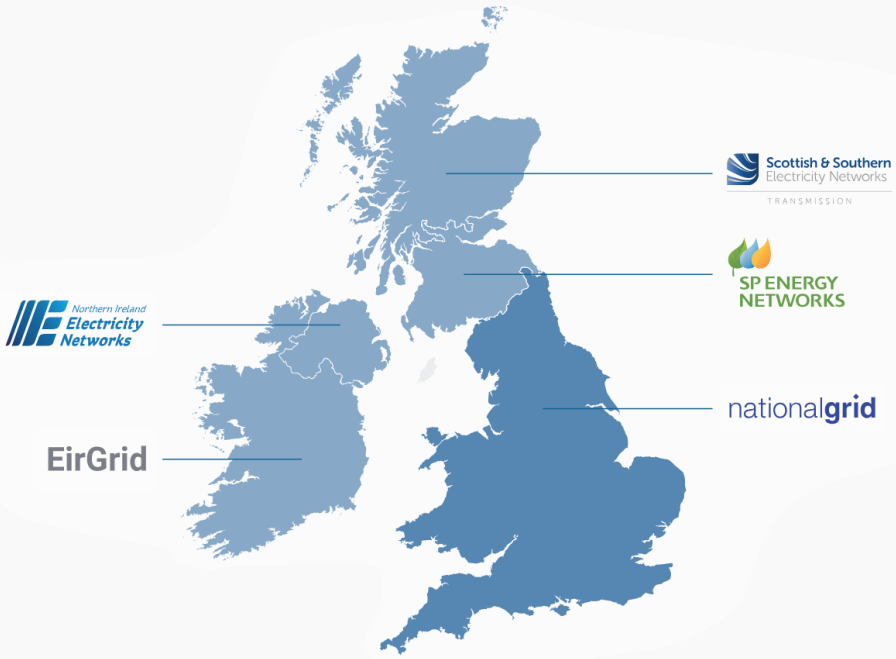
DISTRIBUTION SYSTEM OPERATOR

Zivanayi Musanhi

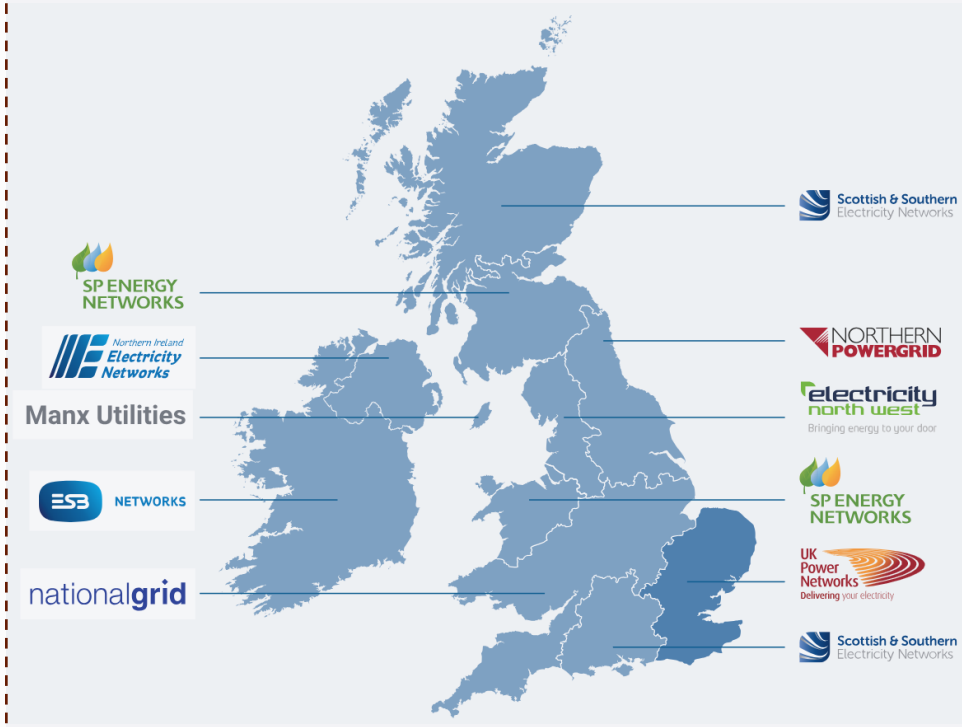
Regional Development Manager

Key operators in the GB Electricity Networks

Transmission Network Operators (TOs)



Distribution Network Operators (DNOs)



System Operator

NESO
National Energy System Operator

ENA

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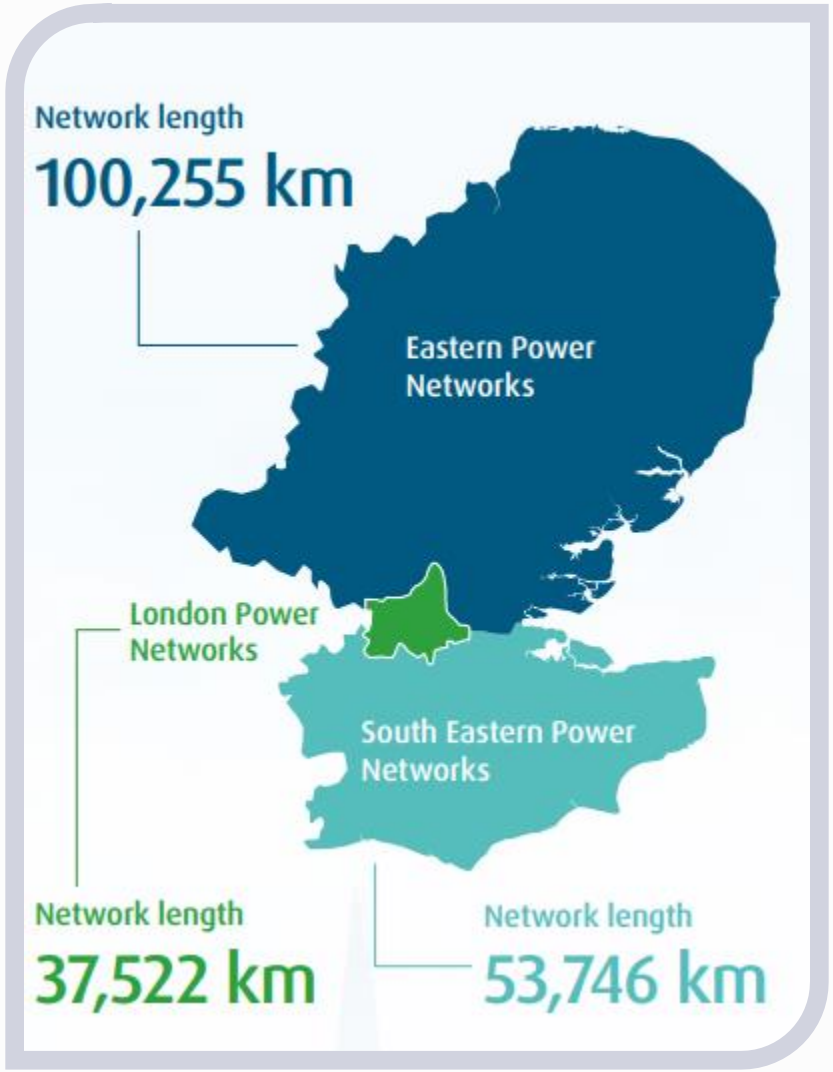
About UK Power Networks



8.5m homes and businesses

28% of UK Total with >23,000 from 2022/23

16+ GW peak demand

33% of UK Total

10+ GW distributed generation

>30% of UK Total

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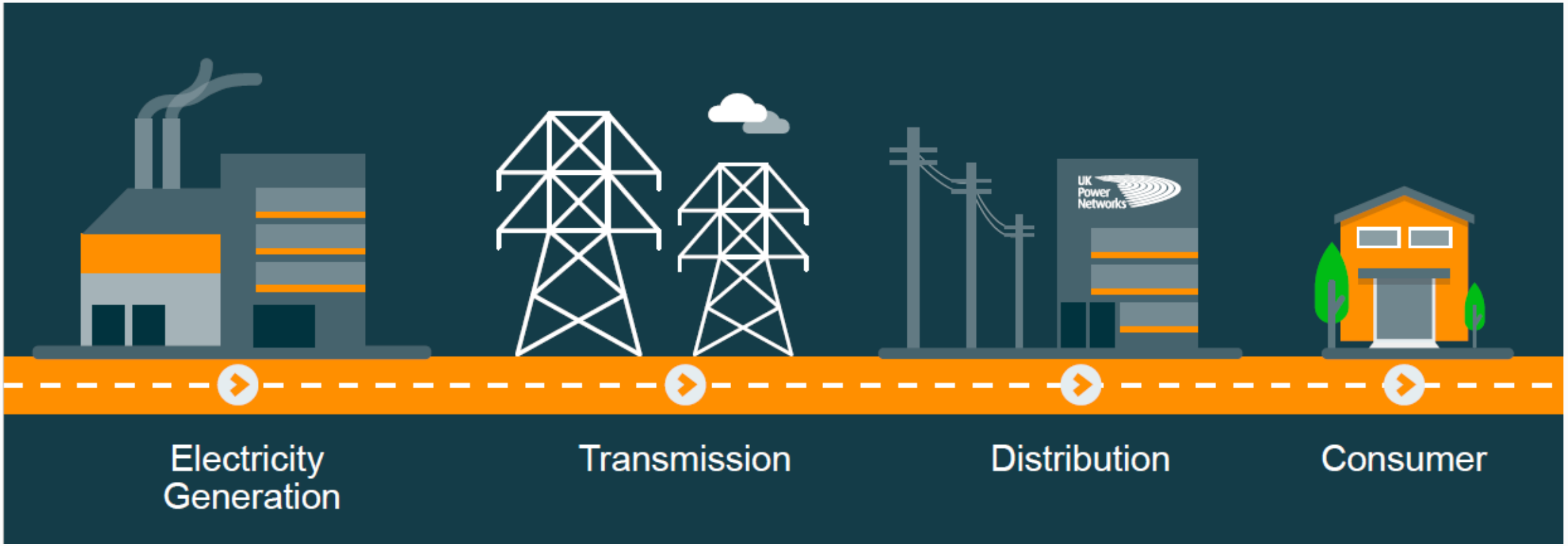
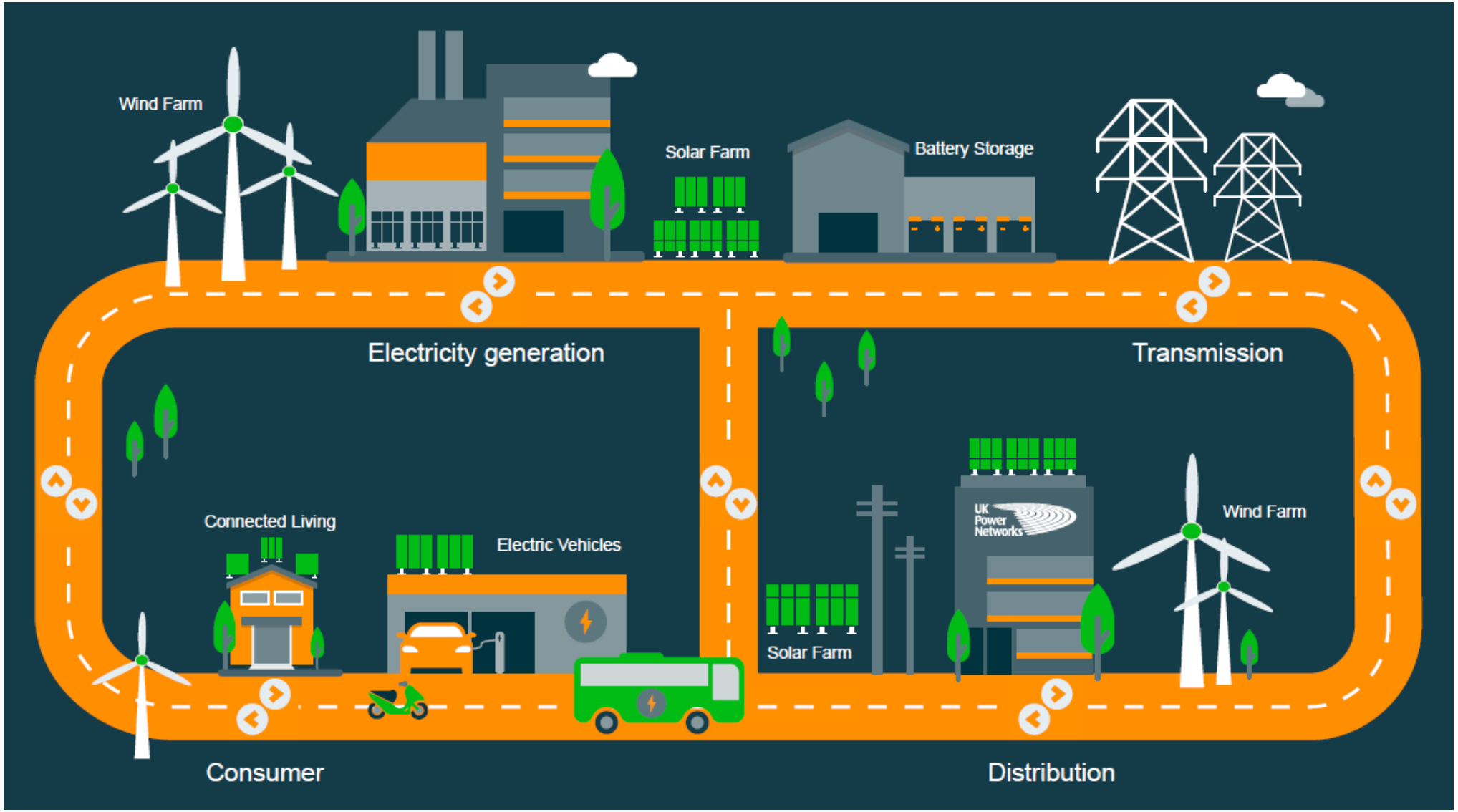
Why do we need a DSO? - Old World



Why do we need a DSO? - New World



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What is the purpose of the DSO?

Our objective:
Ensure electricity networks are fit for purpose and not a blocker to Net Zero

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Best-value solution for customers:

- Right capacity
- Right place
- Right time
- Lowest cost

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- Delivers capacity required efficiently and on time
- Manages connections
- Improves health of network
- Strives to deliver a 10/10 customer service
- Improves reliability and resilience
- Ensures safety of employees and members of the public

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What are the DSO Roles?

- Developing flexibility products and services, as well as the market through which we offer them.
- Flexibility is a way of using existing infrastructure intelligently to save costs and work towards Net Zero.
- Flexibility can be both demand turn-up/down, or generation turn-up/down.

Using data and insights to:

- demonstrate how our network can best meet future capacity needs.
- facilitate connections (including through coordination with the transmission network).
- Determine the most cost-effective means to expand distribution network capacity where required.

All while centring customers through a cost-effective, transparent approach and incorporating them into local authorities' decarbonisation plans.

- Ensuring the flexibility services and products we've developed are used efficiently and transparently in our Control Room.

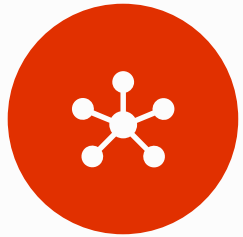
Delivering for customers

COORDINATION

DATA PROVISION

FLEXIBILITY MARKETS

DECISION MAKING



LOCAL NET ZERO

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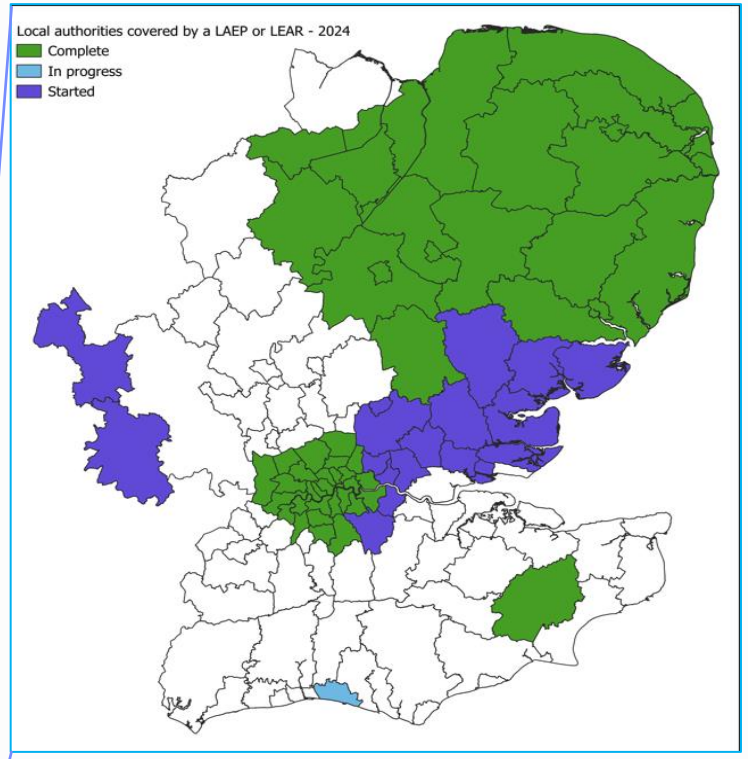
Planning & Network Development

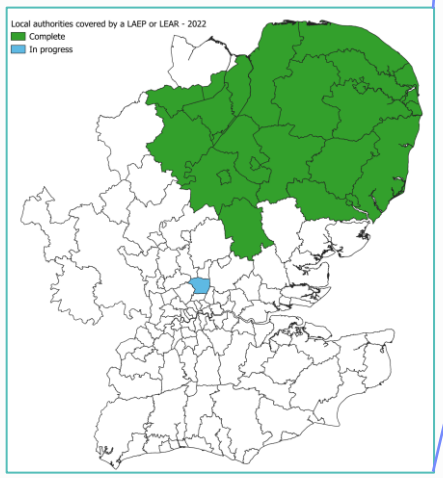
How we are facilitating Local Authorities' Net Zero ambitions

Local Area Energy Planning (LAEP) is building momentum

2024: 73 local authority areas



2022: 22 local authority areas



People

Growing Local Net Zero team with **dedicated account managers** to support under **the LAEP framework**

Data and digital

Free data and digital tools to help develop energy plans and projects

Network planning

Created **six simple ways** to capture local intelligence and to **inform our network investment strategy**

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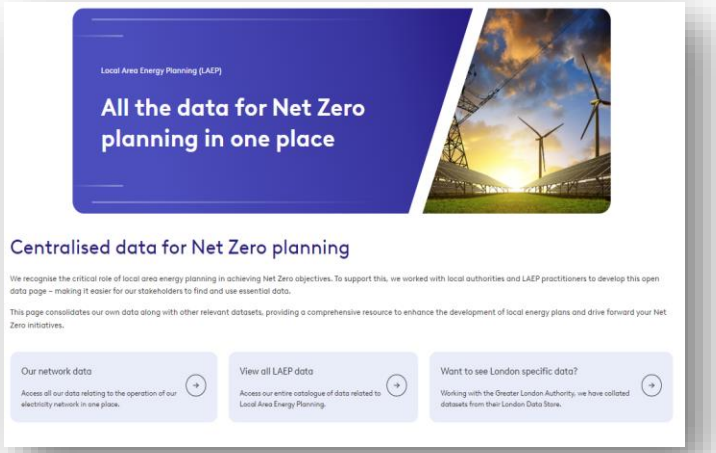
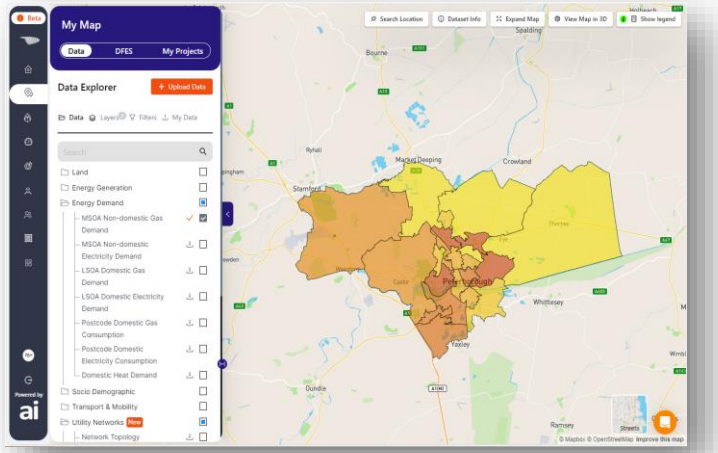
Free data and digital tools

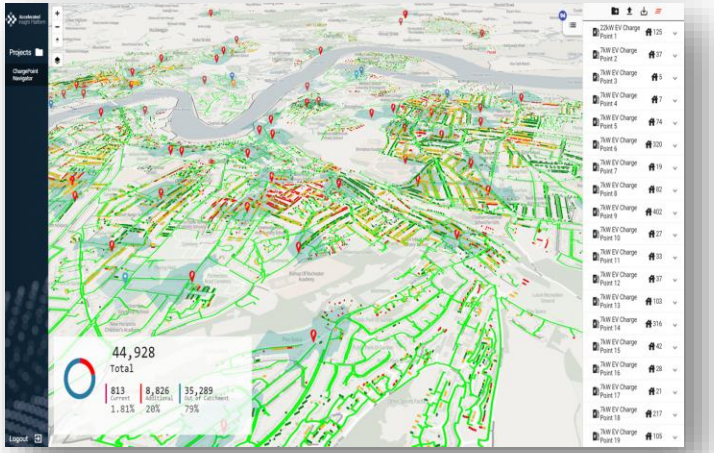
LAEP Open Data Portal:
One stop shop for net zero relevant data



LAEP+:
Data visualisation and collaborative working



ChargePoint Navigator:
Plan rollout of EV charge points



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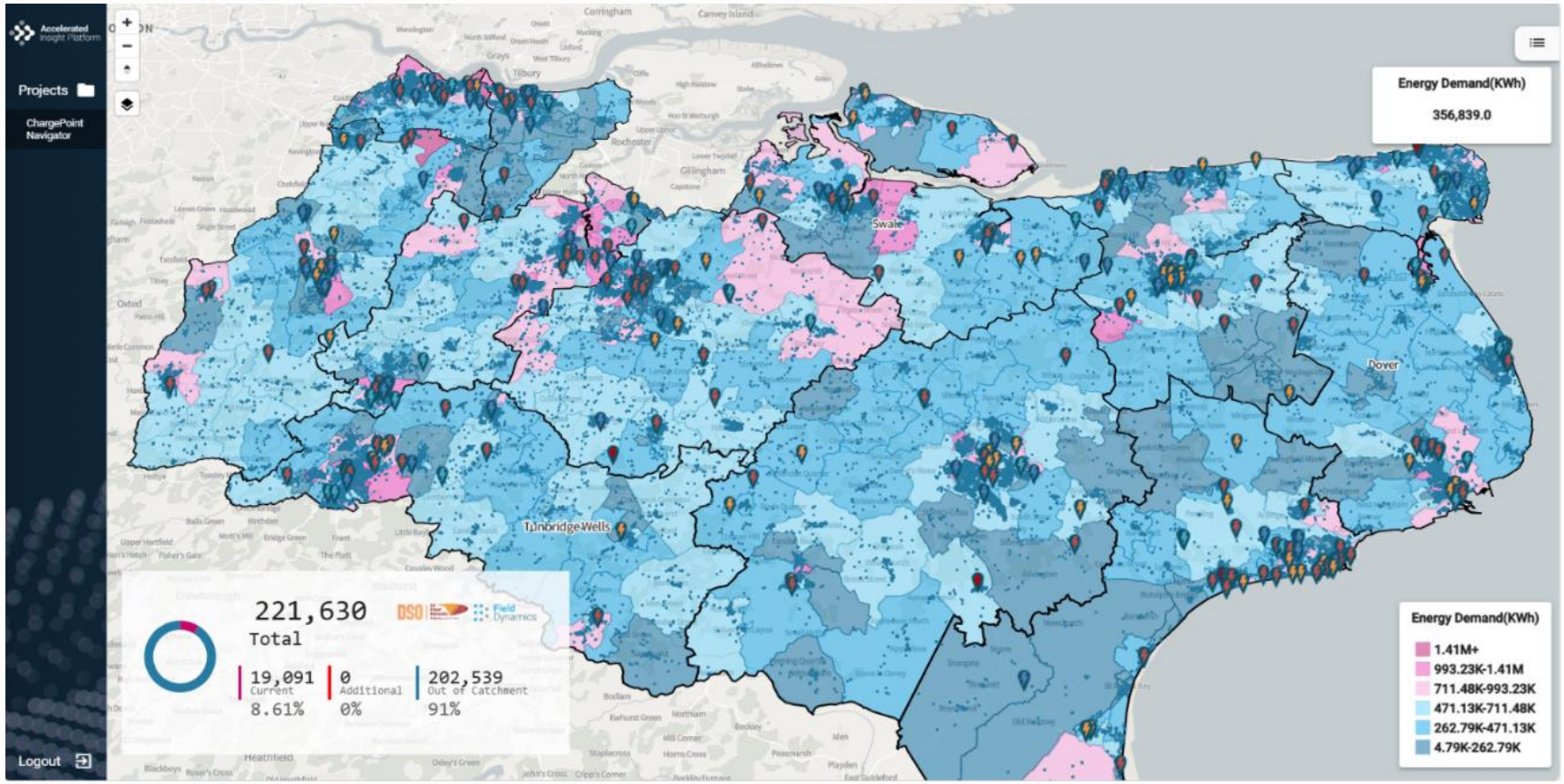
About ChargePoint Navigator Digital Tool



- **Free for local authorities in UK Power Networks Distribution System Operator (DSO) region.**
- **Interactive mapping application detailing supply/demand and distribution.**
- **Scenario planning, procurement shaping and EVI deployment.**

➢ ChargePoint Navigator is offered free of charge and until at least July 2027

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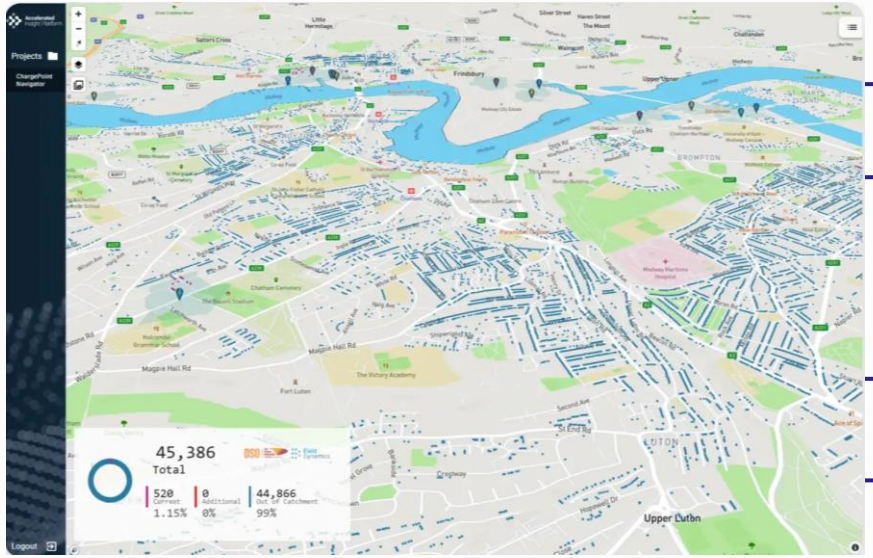
ChargePoint Navigator Key Features



- Macro datasets, Demand Zones, Gigamap and Fleet Map, help you focus on specific areas where you should be rolling out on-street infrastructure based on energy demand and telemetry data.
- Granular datasets, pavement widths and UK Power Networks cabling data, help you access hyper granular data on street level and assess feasibility of your scenarios.
- Catchment modelling by placing chargepoints in the map as part of scenario creation to quantify households captured
- Collaborative working via scenario exporting and sharing access for users (i.e. contractors) to view and edit.

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Flexibility Market Development

Developments in Flex Services

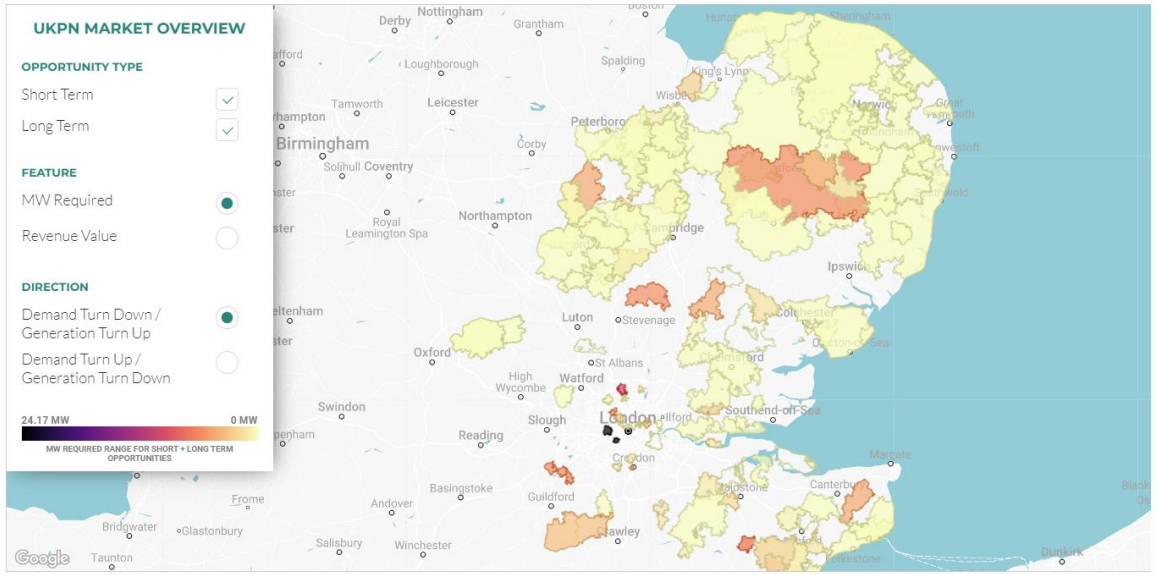
- 10 years since we started. Business as usual for 5 years
- **180,000** flexible assets registered
- **>21GWh** of flexibility dispatched in last two years
- Long-term and day-ahead markets
- Ongoing programme of simplification and automation
- On track to exceed £410m of committed benefits in ED2

- But challenges remain… widening participation, standardisation, coordination with NESO, evolving role of flex

DSO flexibility markets are more accessible than any other

UKPN Flexibility Markets

- ✓ Open to all technologies, incl energy efficiency
- ✓ Opportunities for demand turn down and up
- ✓ Dispatched at day-ahead
- ✓ Utilisation prices up to £600/MWh
- ✓ Minimum capacity = 10kW (can be aggregated)
- ✓ Options to commit long-term or day-ahead
- ✓ Half-hourly metering from asset or boundary
- ✓ Standard DSO flexibility products, data requirements & contract
- ✓ Participate directly or through an aggregator



REQUIRED CAPACITY	OPEN COMPETITIONS	NUMBER OF TRADING ZONES
213.71 MW	1028	130

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DSO Operations

DSO Operations

The DSO Operations team have been set up within the UKPN Control Room to manage the operational needs of our DER customers and cover three main areas:

Dedicated DER Support providing the first line of contact for all connected DERs

Working closely with the DNO to minimise restrictions to DER and using DER to support outages

Real-time control desk managing flexible customers, flexibility services, DNO and NESO coordination

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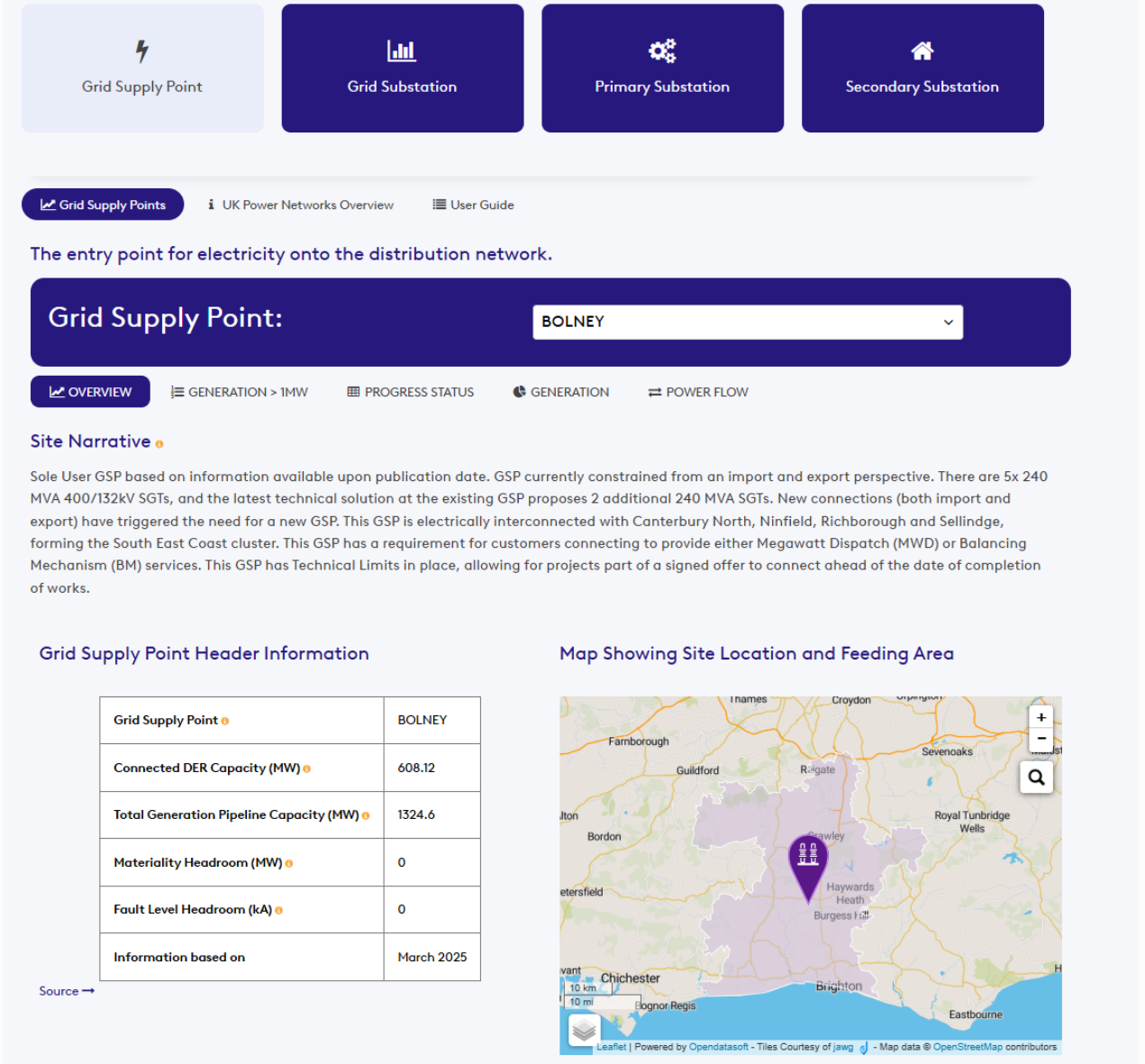
Accelerating Connections

Open Data Portal and NODD

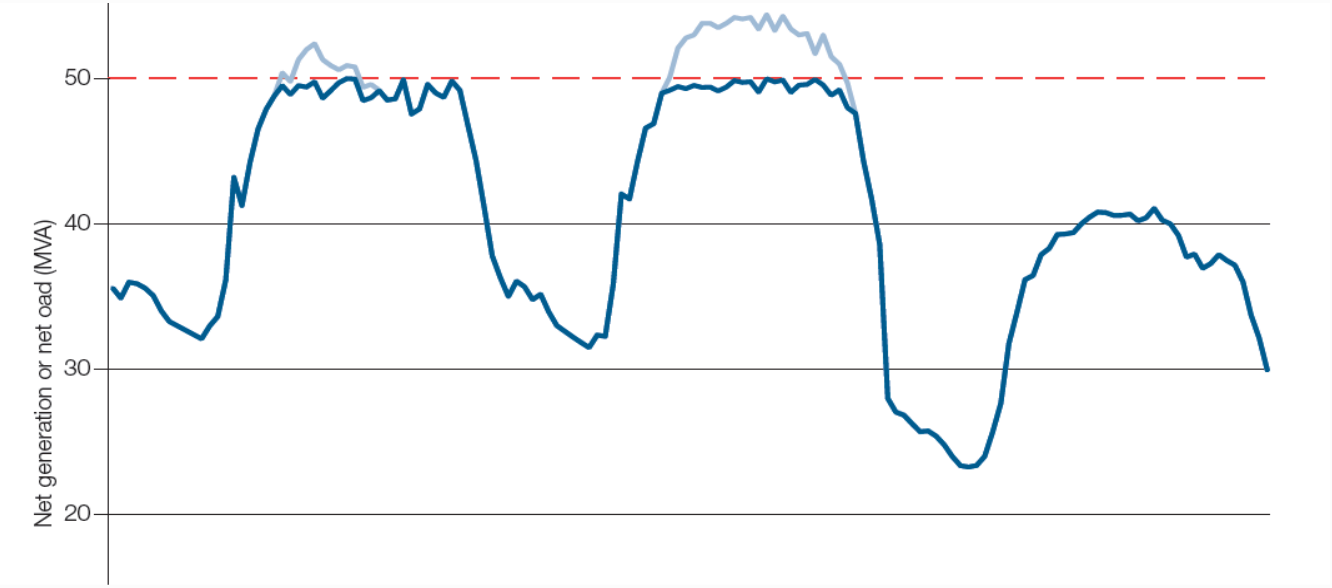


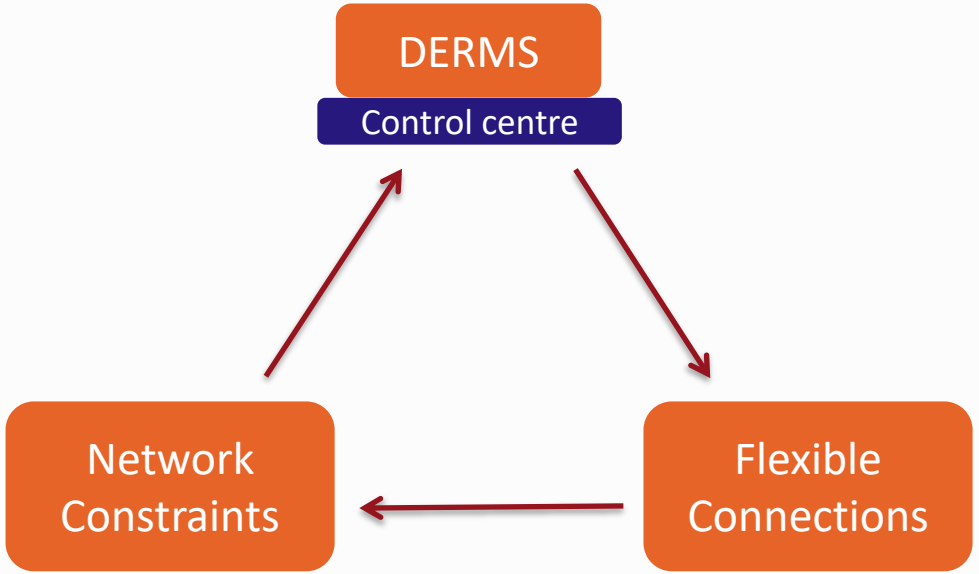
Remember to log in!

Link to the NODD

Flexible connections

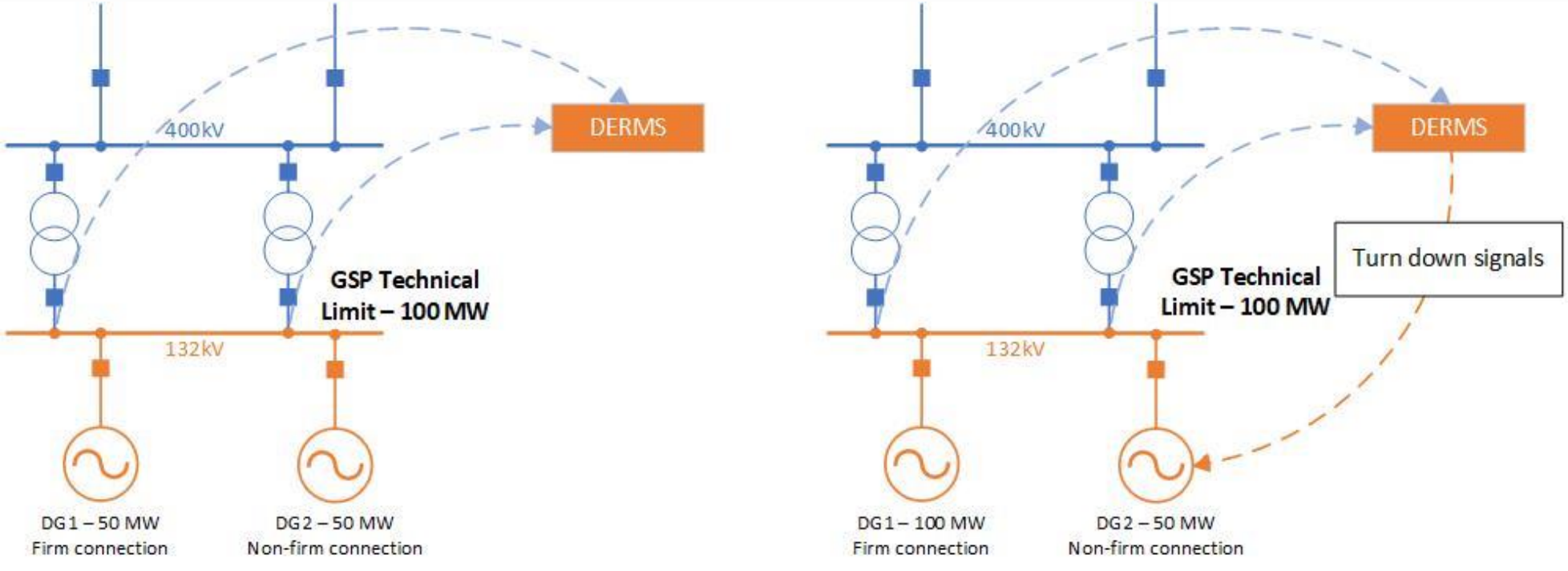
Flexible Connections is a **technical and commercial agreement** allow to connect DERs in constrained network areas, without the need for conventional network reinforcement, subject to **DERs accepting to have their output curtailed when the network is congested.**





Technical Limits

Technical Limits are limits established at the GSP level enabling customers to connect on a non-firm basis until completion of transmission reinforcement works as long as that limit is not breached



The Connections Lab

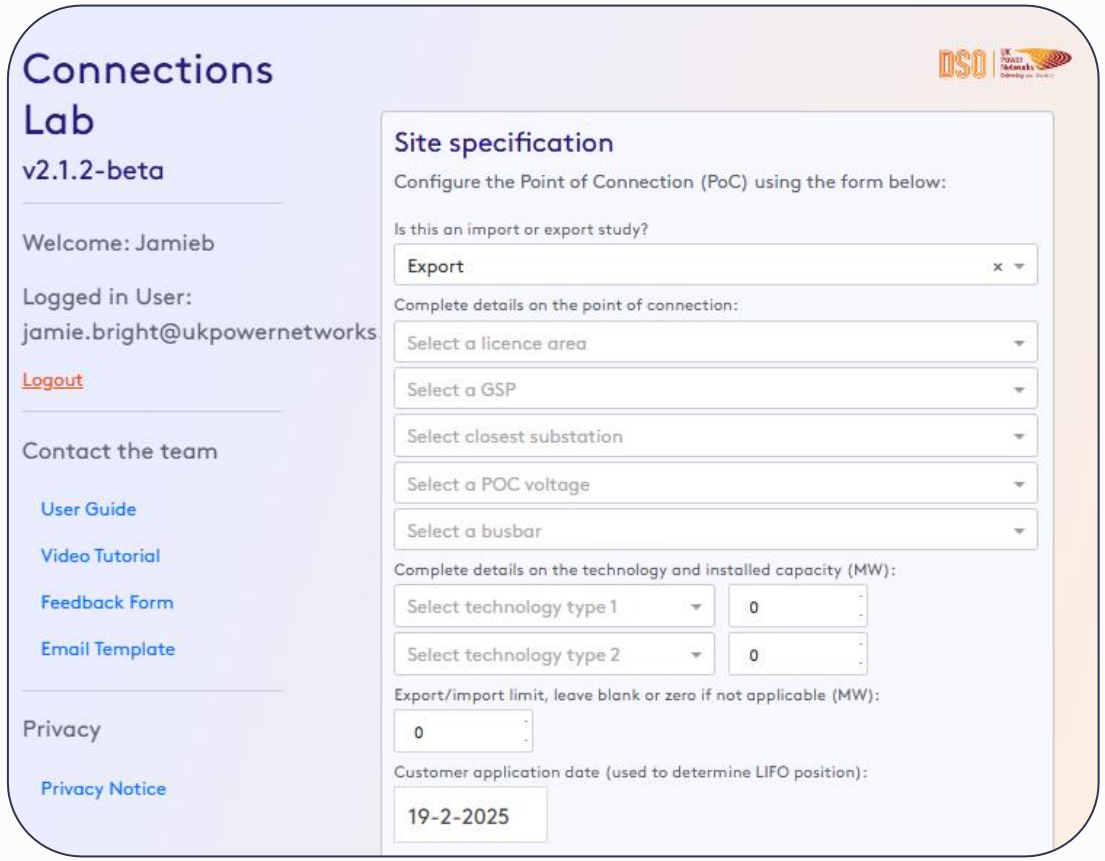
Live since 19th December 2024!

Allows users to model site connected to any GSP/Grid/Primary and get an estimate of the level of curtailment.

User can change parameters such as who is in the queue, generation profiles, ratings etc.

Both Import and Export curtailment

Free. Unlimited. Public. Online.



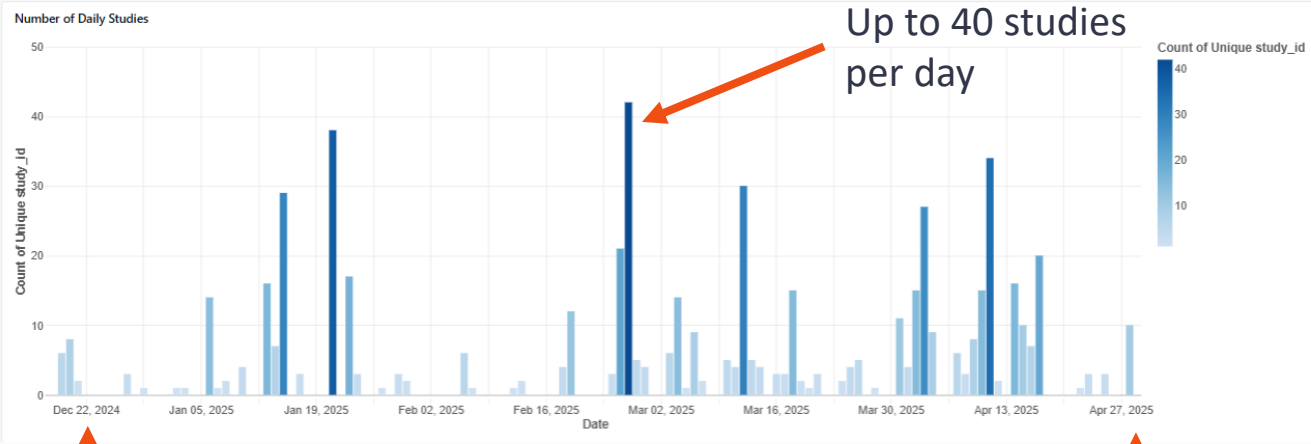
Remember to log in!

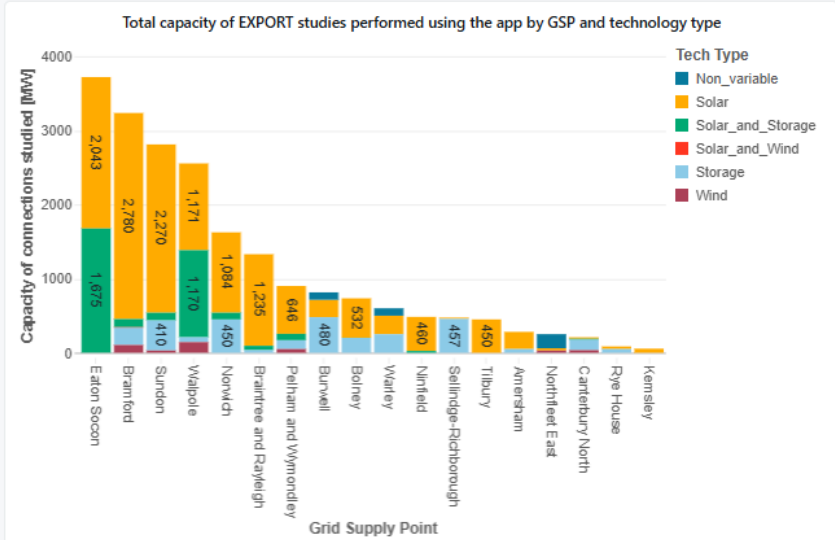
The Connections Lab

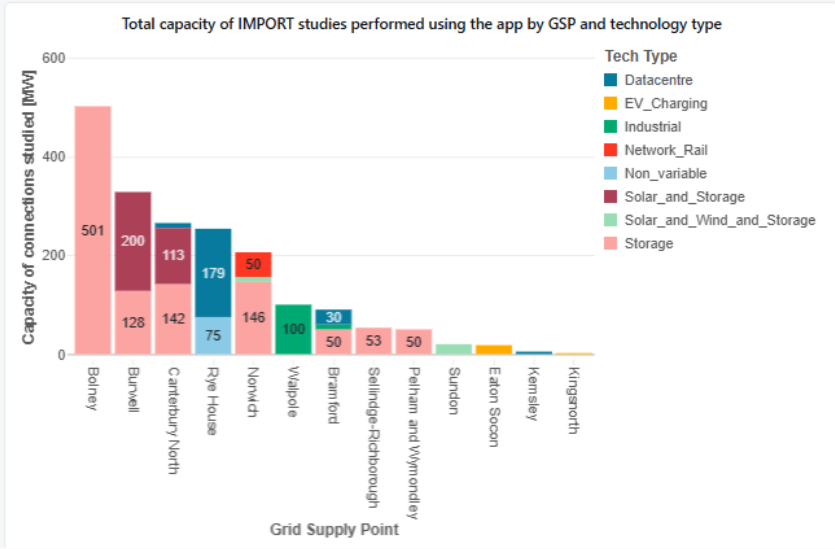
The Connections Lab in numbers

Users Running Studies	Companies Running Studies	Successful studies
80	67	586

EXPORT capacity studied [MW]	IMPORT capacity studied [MW]	Total capacity studied [MW]
20,609.19	1892.39	22,501.58







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DSO Key Performance Indicators

Performance in 2024/25

Metric	2024/25 outturn	2024/25 target
Year-ahead forecasting accuracy for all our substations	Primary (RRE 2) – 90.9% Secondary – 77.3%	90.0%
Year-ahead forecasting accuracy of our LCT forecasts	89.0%	85.0%
Year to Year Capacity Headroom out-performance	108.4%	100.0%
Conversion rate from contracted to onboarded flexibility in-year	31.0%	30.0%
Benefits from flexibility, in-year, based on contracts to date (RRE 7)	£114m	£99m
Curtailment efficiency of generation with flexible connections (RRE 6)	98.9%	99.0%
Amount of capacity unlocked, in-year, for new connections via Technical Limits	0.6GW	0.9GW
Customer satisfaction relating to our network planning responsibility	9.28	9.00
Enhanced network access during planned outages	164.84GWh	90.0GWh
Overall DSO customer satisfaction	9.06	9.00
Instances of non-compliance with DSO:DNO operational agreement	0	0
Flexible Connections (RRE 1)	55, 457.84MW	55, 457.84MW

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2024/25 UKPN DSO Performance Panel Report

DSO Performance Panel Report 2024/25

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Thank you!

Zivanayi Musanhi
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