

Session 4: Flexibility

CEE Regional Conference

19 June 2024

The Net Zero challenge


Achieving Net Zero will require a big shift in how we get our energy and the way we consume it. The electricity system plays a fundamental role in facilitating this transition.



Eight million EVs and Heat Pumps by 2050.



Five times distributed generation by 2050.



Double peak demand by 2050.

These changes far exceed what the UK's electricity networks and systems were originally designed for.

Facilitating Net Zero

GB	SPEN
	
Electric Vehicles ~39m	~5m
Heat Pumps ~25m	~3m
Generation ~4x	~5x

Network planning



Providing the network capacity our customers need safely, efficiently, and on time.



Forecasting

Network Assessment

Options Assessment

Flexibility Tendering

Intervention Decision

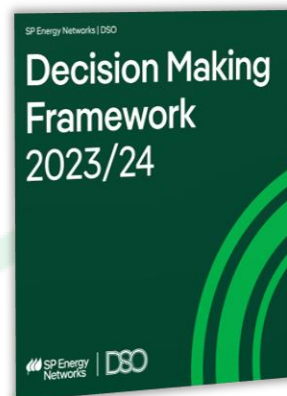
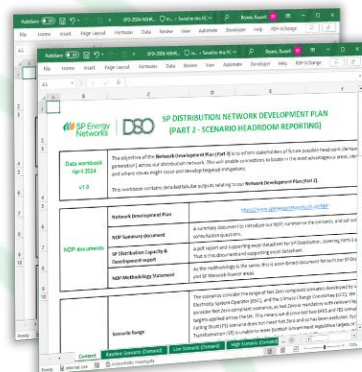
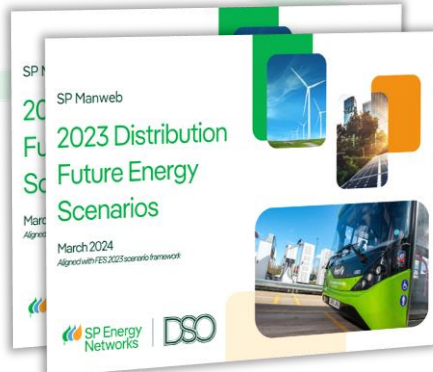
Distribution Future Energy Scenarios (DFES)

Network Scenario Headroom Report (NSHR)

Decision Making Framework (DMF)

Piclo Flexibility Tendering Platform

Network Development Plan (NDP)



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Electric Vehicles
~39m ~5m

Heat Pumps
~25m ~3m

Generation
~4x ~5x

→ Network Planning activity shared on our: [Open Data Portal](#)

Forecasting



Forecasting our customers' needs to efficiently plan and operate our network

Distribution Future Energy Scenarios (DFES)

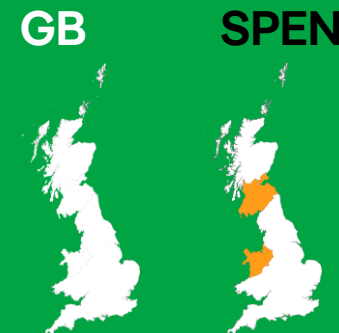
Our DFES scenarios are **developed with stakeholder input** to **assess the range of Net Zero pathways**.

DFES is an annual process to forecast LCTs, electricity demand and distributed generation out to 2050.

Enhanced Forecasting

Granular forecasts: EV-Up & Heat-Up identify where and when our customers are likely to adopt LCTs.

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Generation
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Industry Scenarios

ESO
GB
FES



CCC
Carbon
Budget



Regionalisation

Granular modelling of
Demand & Generation across the
network areas

Annual Process

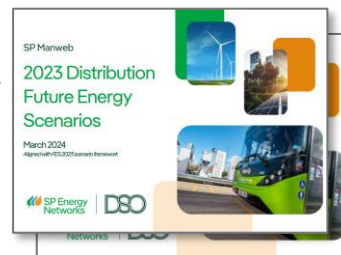
Pipeline

Stakeholder Input

LAEP / LHEES

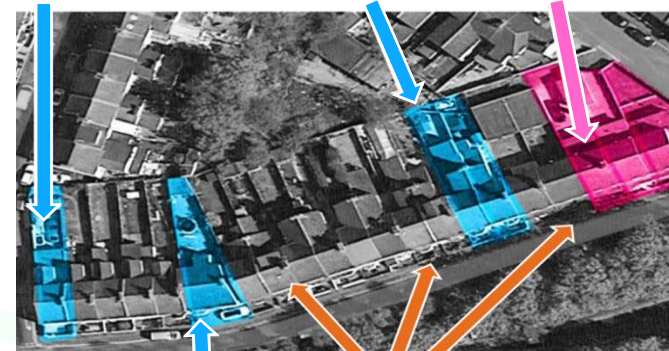
Feedback to ESO

SPM & SPD DFES reports



1 parking space

2 parking spaces



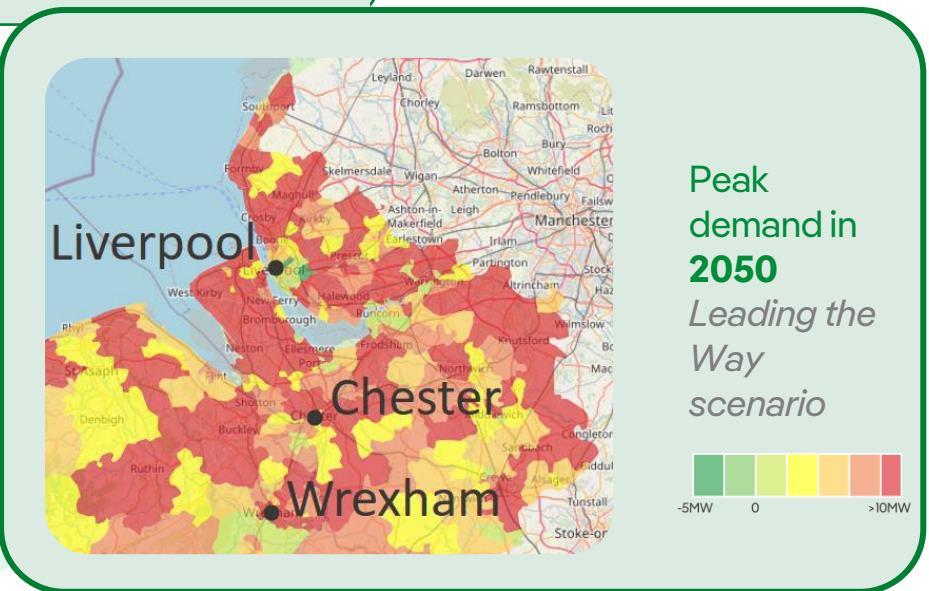
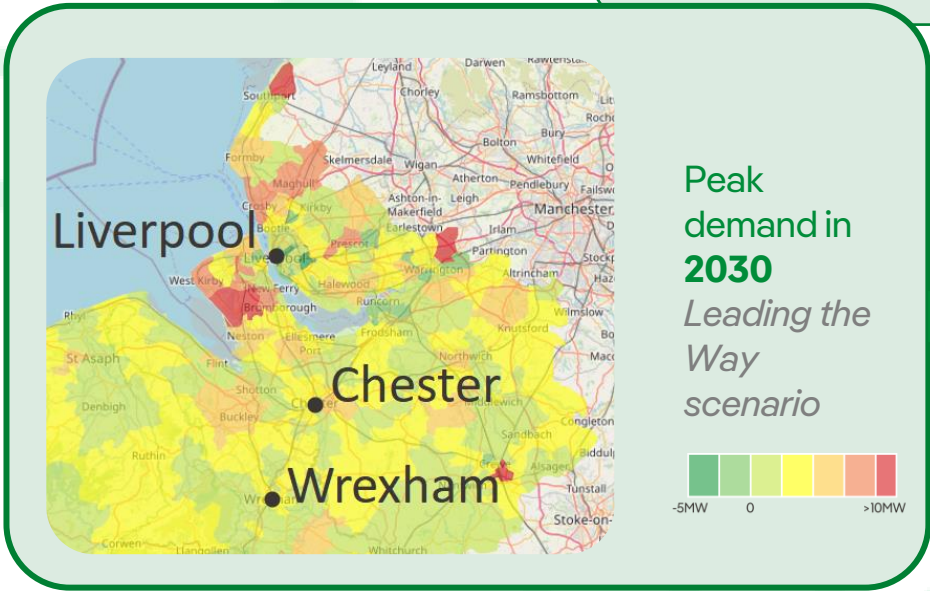
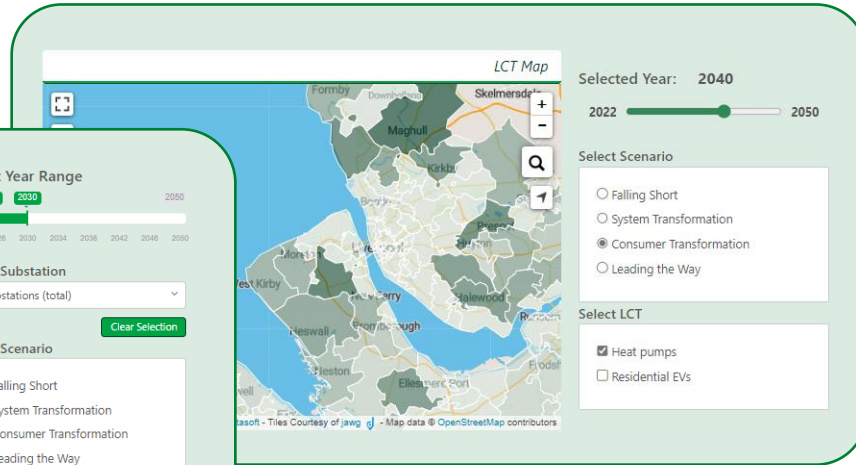
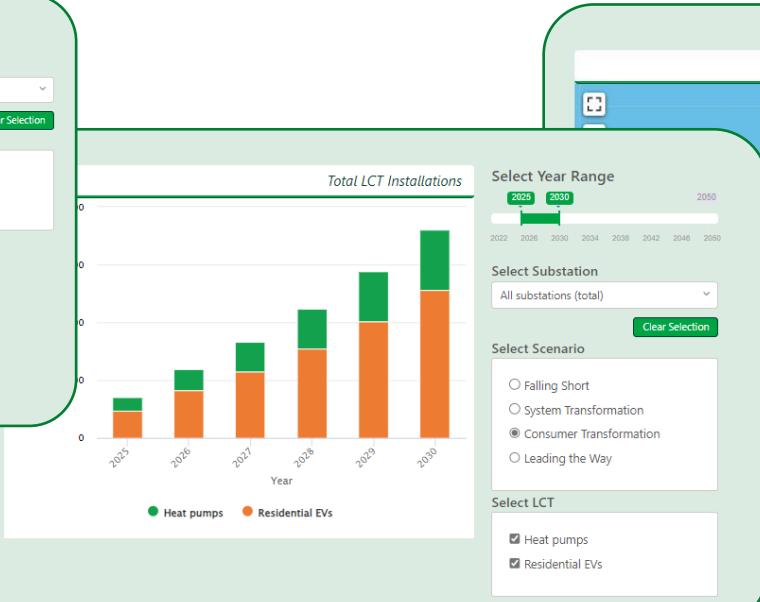
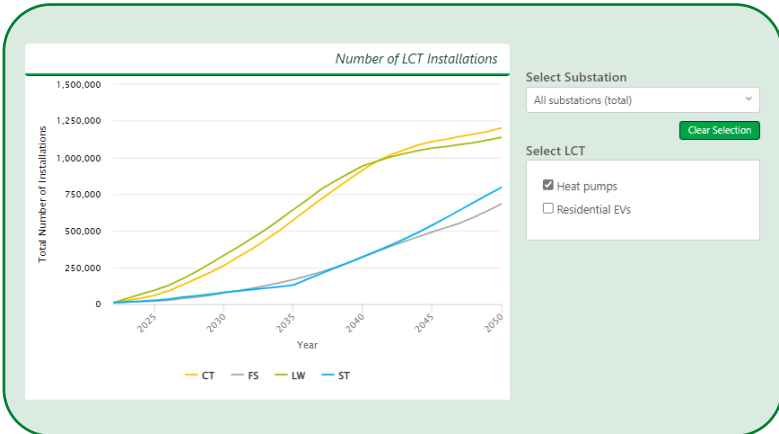
1 parking space

No off-street parking



Our DFES is available on our website: spenergynetworks.co.uk/DFES

What does DFES tell us?



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GB **SPEN**

Electric Vehicles
~39m ~5m

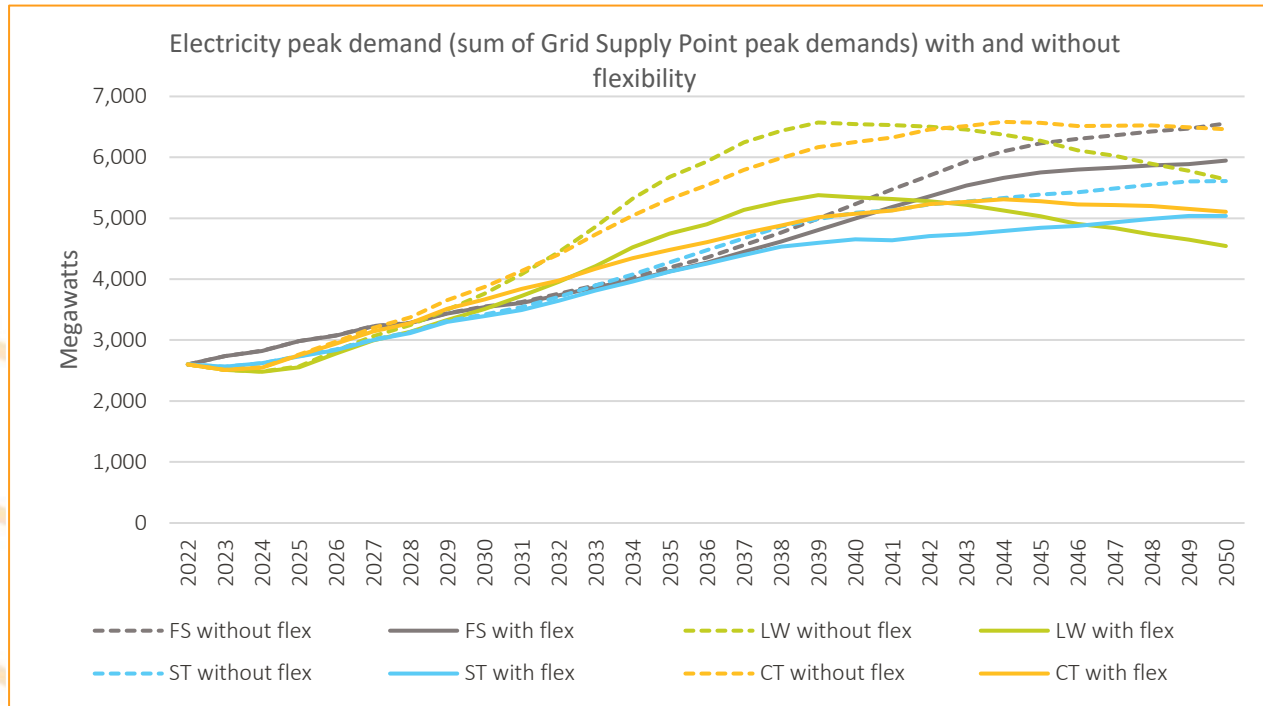
Heat Pumps
~25m ~3m

Generation
~4x ~5x

How Flexibility helps to facilitate Net Zero



Flexibility helps reduce overall peak demand



This is the system demand in the most onerous half an hour of each year – the time when the most electricity is being consumed

According to our DFES, demand Flexibility could reduce peak demand by up to **5% by 2030** and by almost **20% by 2050**

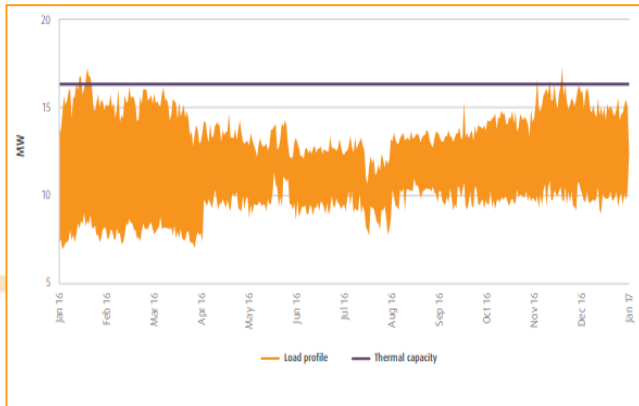
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How Flexibility helps to facilitate Net Zero

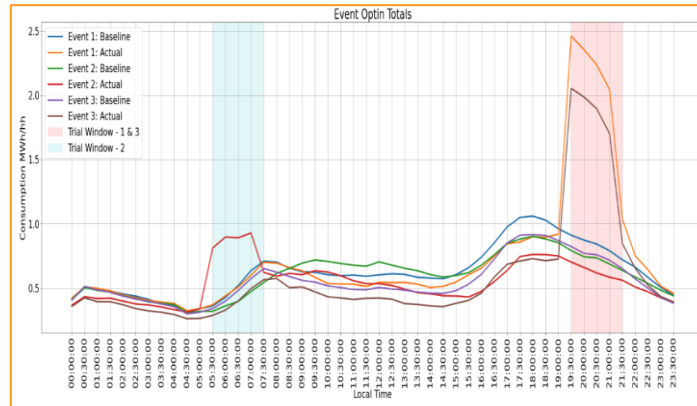


Flexibility helps manage network constraints



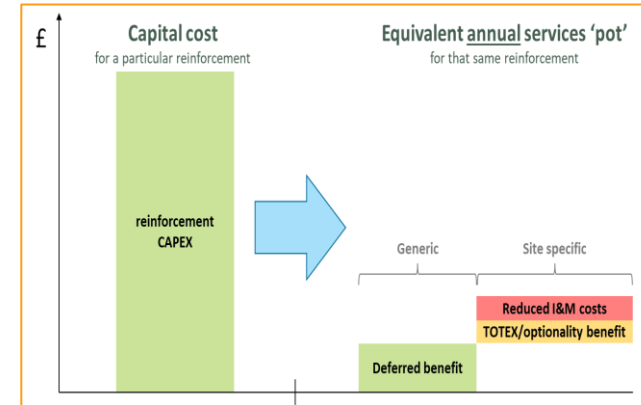
Constraints occur on **daily** or **seasonal** peaks; managing constraints can **defer** the need for **reinforcement**.

Flexibility needs consumers to do things differently



Flexibility providers and their customers have **proven** that flexibility **works** and can **respond** to network needs.

Flexibility is a way of optimising costs



Cost effectiveness is **tested**, ensuring **lowest lifecycle cost** and contracts are placed via a **transparent** tender process.

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Flexibility Procurement – the journey so far

Tendered
8 times
across all
voltage
levels

Over
700MW
Procured

Tendered
for **1500+**
locations

However... Market
liquidity and overall
participation
remains low

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The challenges:



Difficulty in
accessing
platforms



Lack of
co-ordination



Lack of
awareness

How are we responding to support flexibility providers...

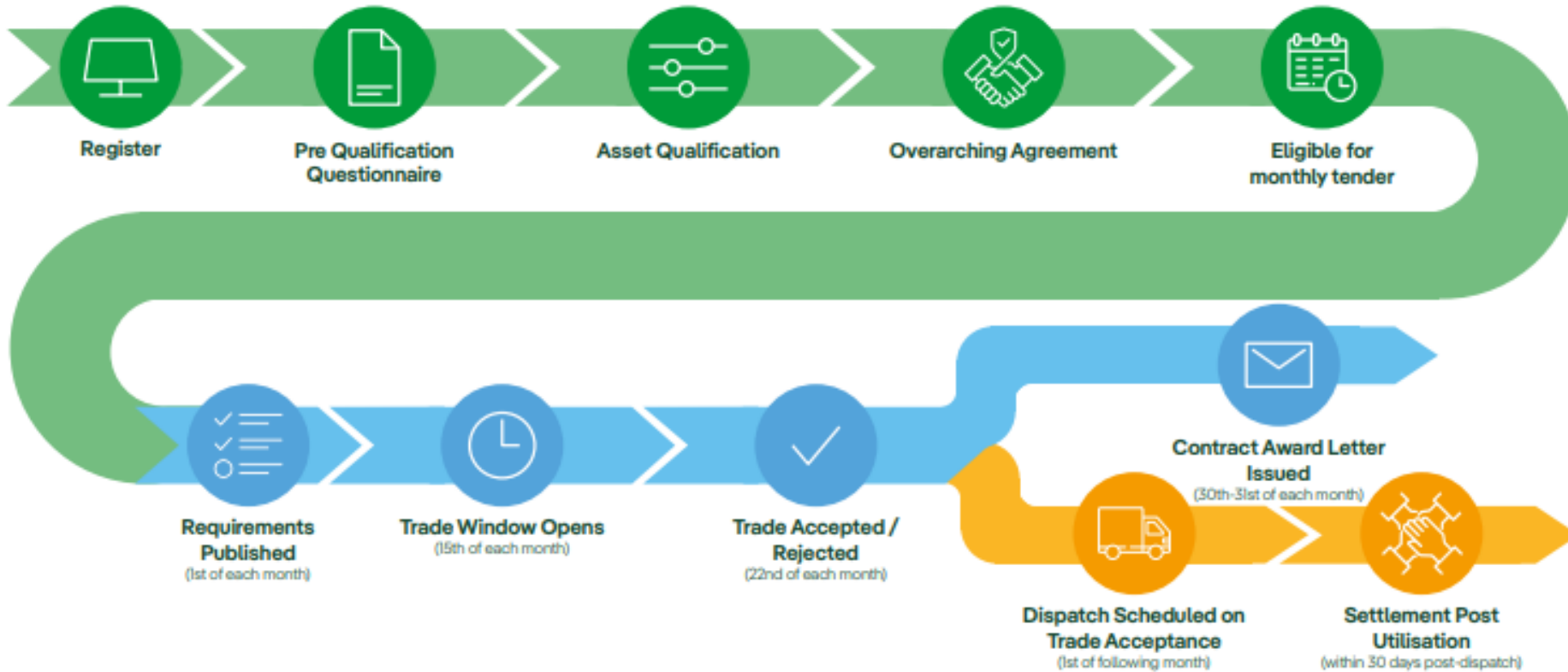
- Developing an end-to-end single platform
- Working closely with ESO on MW Dispatch
- Implementing customer outreach and education through a range of media
- Launching more frequent and shorter time period tenders
- Launching new market opportunities such as operational flexibility

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~4x ~5x

Flexibility Procurement – How to participate



Contact us: flexibility@scottishpower.co.uk

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Our Strategic Optimisation team



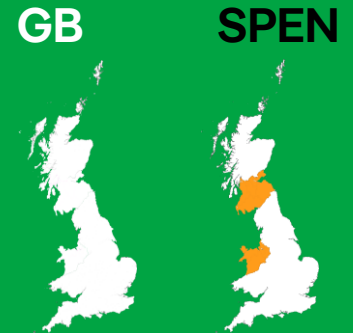
Our Strategic Optimisation team supports Local Authorities and Regional Government bodies develop their energy plans and decarbonisation programmes

We can help Local Authorities by:

- Providing guidance, support, and optioneering to develop co-ordinated energy plans.
- Supporting the development of strategies, scenarios, and decarbonisation programmes.
- Analysing network project viability by determining future decarbonisation scenarios.
- Identifying commercial and strategic partnerships.
- Recognising whole system opportunities and feeding into appropriate plans and registers.
- Undertaking financial modelling and cost benefit analysis for decarbonisation initiatives.



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Contact us: StrategicOptimisation@spenergynetworks.co.uk

Our Strategic Optimisation team



Our Strategic Optimisers work with 40 Local Authorities and 11 Regional Government bodies



Scotland (22 Local Authorities)

Local Heat and Energy Efficiency Strategies (LHEES)

- Developed during 2023 and published in 2024.
- Detailed Delivery Plans developed by March 2025.
- 6 Regional Energy Plans aligned with Growth Deals.
- Our LHEES tool supported Local Authorities complete the required analysis for their plans.



Wales (8 Local Authorities)

Local Area Energy Planning (LAEP)

- Developed during 2023 and being published in April/May 2024.
- LAEP outputs input will be into North & Mid Wales Regional Energy Plans.
- National Energy Plan for Wales later in 2024.
- Aligns with the Welsh Government Energy Networks in Wales Group and The Future Energy Grids for Wales Report, published July 2023.



England (10 Local Authorities)

Local Area Energy Planning (LAEP)

North West Net Zero Hub:

- Consolidating LAEPs for 9 Local Authorities in Liverpool City Region Combined Authority and Enterprise Cheshire & Warrington.

Marches Forward Partnership:

- LAEPs for Shropshire Council and Powys County Council.
- Cross Boundary Regional Energy Plan.

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Supporting LAs – LHEES tool



We initially developed our LHEES tool to support our Scottish Local Authorities develop their LHEES plans

Enables Local Authorities to simulate the impacts of different heat & energy strategies on our network.

This tool

- Supports Local Authorities in developing their LHEES / LAEP / REP
- Provides a view of current cable and substation capacity, constraints and required reinforcement work
- Informs our decision making on potential future network requirements.
- Promotes a shared knowledge around future network requirements.

For a demo, you can contact strategicoptimisation@spenergynetworks.co.uk.

The new version of the tool will be shared with Local Authorities in summer 2024

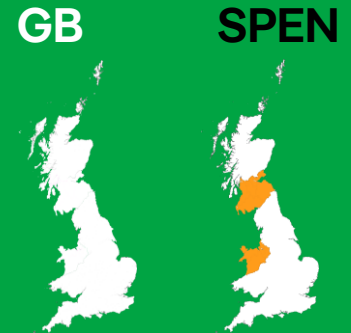
Violations Summary	
Total Load Violations	20
Total Voltage Violations	0
Total Transformer Violations	1

Costs Summary		
METRICS	Total Load Added Kwh	99
	High Cost Cap Per Kwh	£1720
	Calculated Cost Per Kwh	£166
FINAL COSTS	Total Customer Costs	£3
	Total ONO Costs	£57989
	Total Combined Costs	£57992

Load Violations (20)	
Transformer Violations (1)	

We are now developing improvements to the tool – which will be rebranded as our LANIT tool - to support Local Authorities develop their Local Area and Regional Energy Plans.

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Q&A

