Distribution Network Options Assessment (DNOA) Report

December 2025

Contents

Note: *The DNOA options presented are based on our latest 2024 Network Development Plan along with an update based on the 2025 Network Scenario Headroom Report (NSHR) (available at: www.enwl.co.uk/ndp). The information in this document is also based on the May 2025 update of the Long Term Development Statement (LTDS).This document has been produced before our work preparation for SP ENW ED3 business plan, and it is therefore subject to change.*

Introduction to Distribution Network Options Assessment (DNOA)

SP Electricity North West

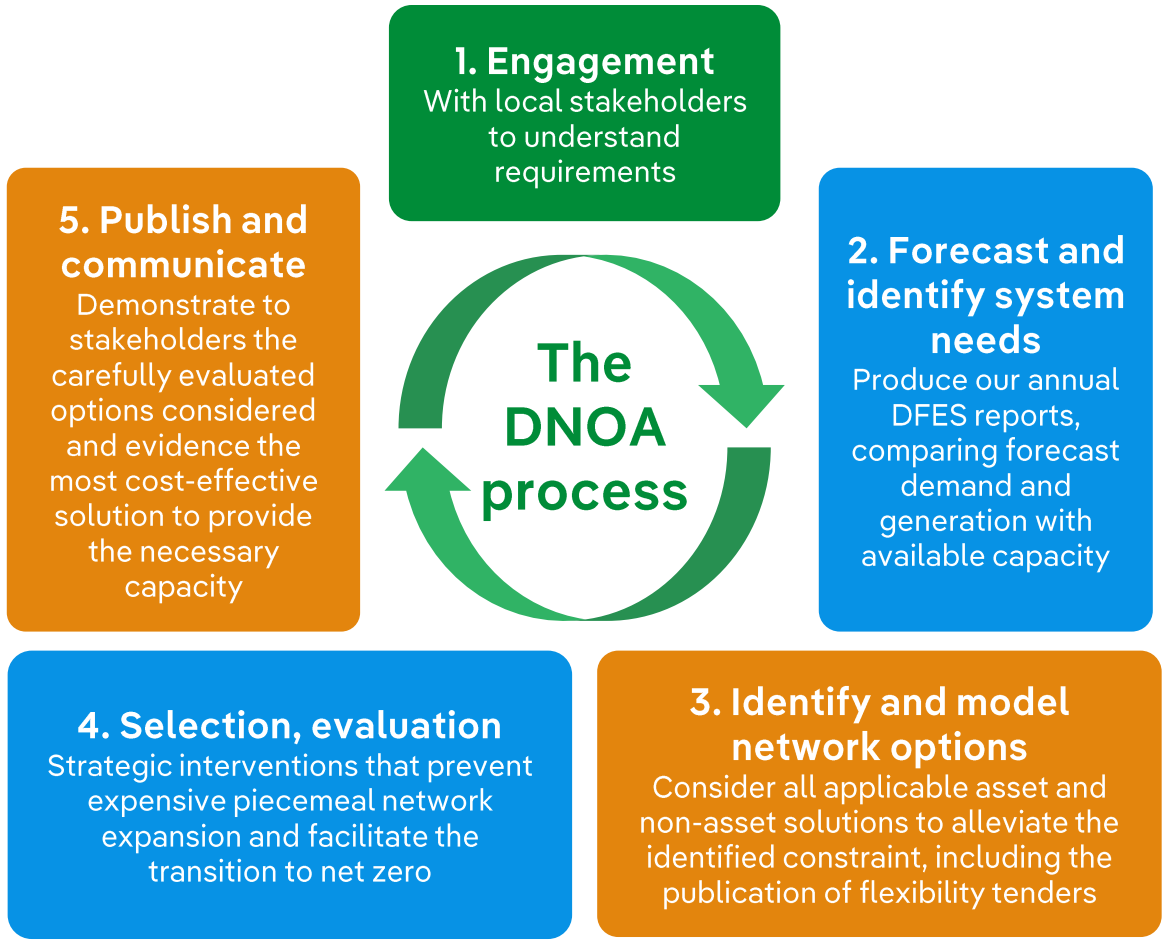
The DNOA process is a cycle of engagement, analysis, optioneering and evaluation, and communication which determines how we meet network capacity needs through the procurement of flexibility or strategic investment.

Using our DNOA framework we explore all options to manage our load-related expenditure as efficiently as possible to meet the increasing demand from widespread adoption of LCTs (e.g., electric vehicles, heat pumps), data centres, electrolysers, etc.

After we have identified future capacity needs through engagement with stakeholders and developed our Distribution Future Energy Scenarios (DFES), we consider all viable solutions to alleviate network constraints and make an informed decision.

In this DNOA report we present our recommendations in terms of network constraint solutions, including the use of flexibility services.

Our DNOA methodology and this DNOA report are published annually to share information about our network development plans with our stakeholders such as flexibility services providers and local authorities to support their net zero planning and decision-making.



2. How different stakeholder personas can use DNOA

How different stakeholder personas can use DNOA

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Stakeholder personas:

Distributed generation operators

Battery storage operators

What support do these stakeholders want?

Support in their planning and operations making informed decisions about energy market opportunities and connection of their assets to the distribution network

How can these stakeholder personas use our DNOA?

Flexibility services

- Understand current and future needs of DSO flexibility services across the region
- Identify opportunities for additional revenues from their participation in flexibility markets

Reinforcement

- Combine DNOA decisions with the Network Development Plan to understand when and where capacity will be released to facilitate new connections
- Identify strategic/optimal locations for new connections

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How different stakeholder personas can use DNOA?

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Stakeholder personas:

Flexibility aggregators

Domestic and I&C customers

What support do these stakeholders want?

Inform investment and operational decisions while fostering customer-oriented initiatives on flexibility services

How can these stakeholder personas use our DNOA?

Flexibility services

- Identify opportunities for revenues from their participation in DSO flexibility markets, informed by uptake of LCTs
- Increase confidence in DSO flexibility services through increased transparency by combining DNOA with other DSO publications (incl. flexibility service tenders, DFES, NDP)
- Make well-informed decisions on integrating domestic and non-domestic customers in flexibility asset portfolios

Reinforcement

- Understand planned reinforcement to prevent network limitations from fully exploiting resources/assets capabilities
- Understand the extent of energy bill savings through the deployment of flexibility services to defer more expensive network reinforcement
- Understand DSO plans to release capacity that facilitates local LCT uptake that in turn will unlock additional local flexibility service capabilities

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How different stakeholder personas can use DNOA

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Stakeholder personas:

Local authorities

What support do these stakeholders want?

Promote and support targeted sustainable developments and initiatives in local plans

How can these stakeholder personas use our DNOA?

Flexibility services

- Inform Local Area Energy Plans (LAEP) and whole-energy system thinking with inputs to whole-system cost assessments
- Understand social value from DSO planning through cost-efficient release of network capacity to facilitate local government plans
- Identify opportunities for energy saving programmes and revenues from flexibility services

Reinforcement

- Combine DNOA decisions with the Network Development Plan to understand when and where capacity will be released to facilitate local government plans for economic growth and decarbonisation
- Combine DNOA decisions with NDP and DNO business plans to understand the timeline, cost savings and benefits for local customers from local network investments

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How different stakeholder personas can use DNOA

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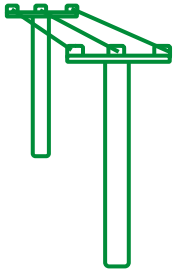
Stakeholder personas:

Network operators / iDNOs



What support do these stakeholders want?

Support investment and operations to exploit cross-vector synergies and enhance whole-system thinking

How can these stakeholder personas use our DNOA?

Flexibility services

- Identify opportunities for synergies across energy vectors and implement innovative technology solutions to improve network efficiency and sustainability
- Enhance data exchanges on flexibility services between network companies resulting in improved whole-system planning

Reinforcement

- Understand network constraints and planned reinforcement to better inform their plans
- Enhance data exchanges on network reinforcement between network companies resulting in improved whole-system planning

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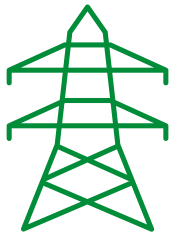
How different stakeholder personas can use DNOA

Stakeholder persona:

National Energy System Operator (NESO)



What support does this stakeholder want?

Inform whole-system planning coordination with a holistic and transparent view of granular DSO planning and decision-making

How can these stakeholder personas use our DNOA?

Flexibility services

- Understand current and future DSO flexibility service requirements at sub-regional and granular level
- Enhance transparency in use of flexibility services in network planning and network investment
- Inform NESO and Regional Energy Strategic Plan (RESP) pathways with inputs to whole-system cost assessments (combined with information from DSO flexibility tenders)

Reinforcement

- Combine DNOA decisions with the DFES and Network Development Plan to understand when and where capacity will be released and the associated local drivers to inform RESP whole-system pathways
- Combine DNOA decisions with NDP and DNO business plans to understand the timeline and cost savings and benefits for local customers from local network investments

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3. Optioneering between flexibility services and conventional reinforcement

Report structure

A common template for the reporting of data at each GSP substation has been developed. The boxes on the left provide an overview of the substations served from the GSP along with technical insights into the existing demand, generation and LCT uptake. The boxes on the right provide an overview of future evaluation requirements, quantities of flexible services tendered and procured.

Number of bulk supply points (BSPs) and primary substations by grid supply point (GSP)

Maximum demand, total installed generation capacity and total energy at GSP (FY24 Best View)

Total number of electric vehicles, domestic & non-domestic heat pumps at GSP (FY24 Best View)

Customer numbers: Approximately 178,000

Area of supply: Approximately 140 km²

Local Authority Areas: Manchester, Stockport, Cheshire East

Main cities, towns and villages: Reddish, Stockport, Marple, Bramhall, Hazel Grove, Poynton, Romiley

No. of primary substations: 23		Evaluation requirements FY25-FY35	Sites: 9 (demand)	
No. of bulk supply points: 4			Capacity: 61.4 MVA (demand)	
Maximum demand	258.4 MVA	Flexible services FY25-FY28	Sites	8
Generation capacity	43.5 MW		Tendered	26.87 MVA
Energy demand	1363.8 GWh		Procured (spring 24-spring 25)	4.73 MVA
Domestic HPs	1618	Approved reinforcement work FY25-FY28	Sites	2
Non-domestic HPs	239		New firm capacity	46 MVA
Electric vehicles	12385			

Quantities of sites which will be evaluated (flexible services vs reinforcement) over the next 10 years.

Quantities of tendered and procured flexible services as currently published (tenders accumulated from FY24-FY28)

Quantities of approved reinforcement work on sites where flexibility services were not available

The DNOA decision

DNOA decision ... continues next page

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Cheadle Heath	Transformer	✗	✗	Reinforce
Heaton Moor	Transformer	✗	✗	Load transfer
Heaton Norris	Transformer & switchgear (FL)	✗	✗	Load transfer Reinforce (FL)
Levenshulme	Transformer	✗	✗	Reinforce
Longsight	Switchgear	✓	✗	Flexibility
Longsight BSP	Transformer	✓	✗	Flexibility
Marple	HV Transfer	✓	✗	Flexibility
Moss Side (Longsight)	Transformer	✓	✗	Flexibility
Portwood	Switchgear	✗	✓	Flexibility

Bredbury GSP

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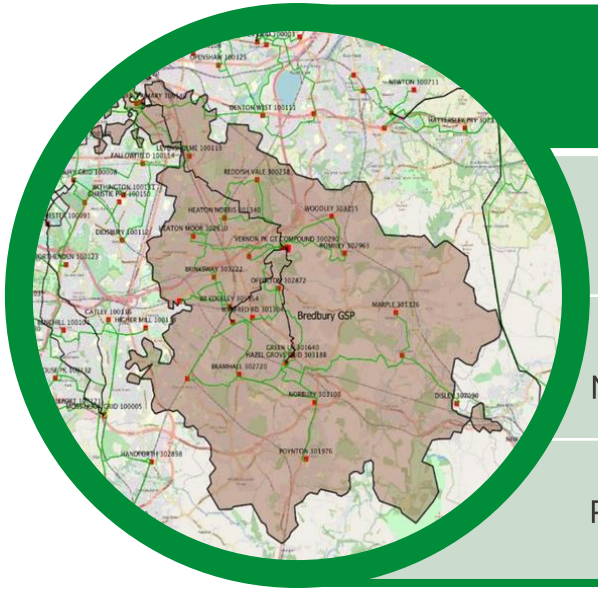


Customer numbers:
Approximately 178,000

Area of supply:
Approximately 140 km^2

Local authority areas:
Manchester, Stockport, Cheshire East

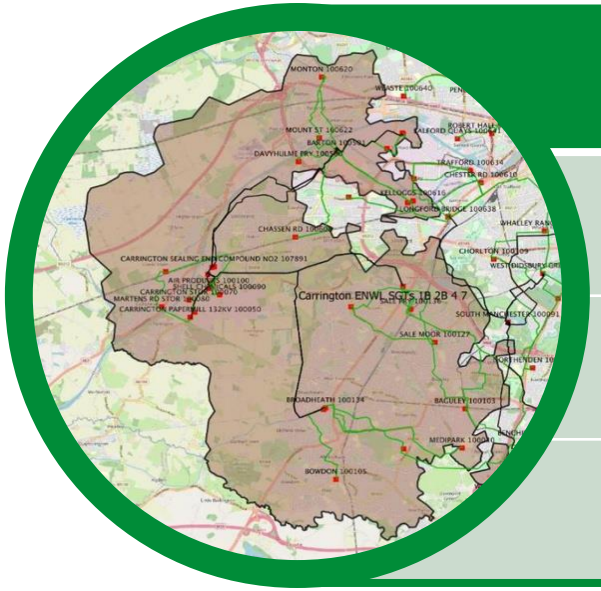
Main cities, towns and villages:
Reddish, Stockport, Marple, Bramhall, Hazel Grove, Poynton, Romiley

No. of primary substations: 23		Evaluation requirements FY25-FY35	Sites: 9 (demand)	
No. of bulk supply points: 4			Capacity: 61.4 MVA (demand)	
Maximum demand	258.4 MVA	Flexible services FY25-FY28	Sites (Spring 25)	8
Generation capacity	43.5 MW		Tendered (Spring 25)	26.6 MVA
Energy demand	1363.8 GWh		Procured (Spring 24-Spring 25)	4.73 MVA
Domestic HPs	1618	Approved reinforcement work FY25-FY28	Sites	2
Non-domestic HPs	239		New firm capacity	46 MVA
Electric vehicles	12,385			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Cheadle Heath	Transformer	✗	✗	Reinforce
Heaton Moor	Transformer	✗	✗	Load transfer
Heaton Norris	Transformer Switchgear (FL)	✗	✗	Load transfer Reinforce (FL)
Levenshulme	Transformer	✗	✗	Reinforce
Longsight	Switchgear	✓	✗	Flexibility
Longsight BSP	Transformer	✓	✗	Flexibility
Marple	HV Transfer	✓	✗	Flexibility
Moss Side (Longsight)	Transformer	✓	✗	Flexibility
Portwood	Switchgear	✗	✓	Flexibility
Romiley	Transformer	✓	✗	Flexibility
Southern Gateway (new primary substation)	Transformer	✗	✗	Reinforce
Vernon Park BSP	Switchgear (FL)	✗	✗	Reinforce
Victoria Park	Transformer	✓	✗	Flexibility

Carrington GSP



Customer numbers:
Approximately 110,000

Area of supply:
Approximately 112 km^2

Local authority areas:
Manchester, Trafford, Cheshire East, Salford

Main cities, towns and villages:
Urmston, Stretford, Trafford, Sale, Altrincham

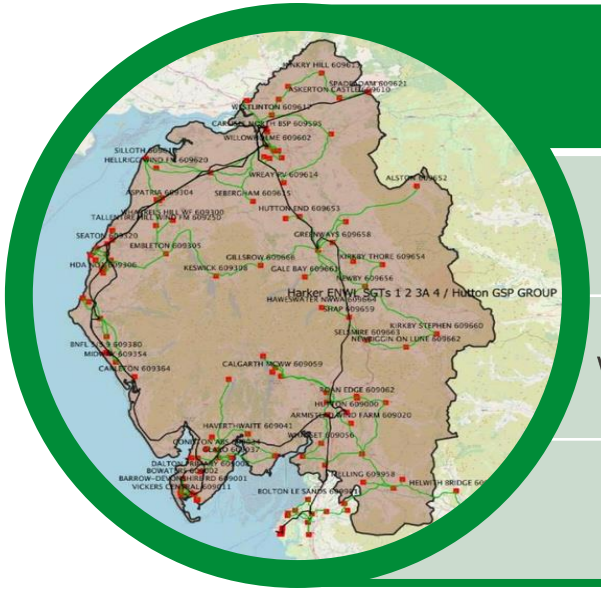
No. of primary substations: 17		Evaluation requirements FY25-FY35	Sites: 3 (demand)	
No. of bulk supply points: 4			Capacity: 9.4 MVA (demand)	
Maximum demand	223.1 MVA	Flexible services FY25-FY28	Sites (Spring 25)	1
Generation capacity	91.4 MW		Tendered (Spring 25)	0.03 MVA
Energy demand	1145.7 GWh		Procured (Spring 24-Spring 25)	0 MVA
Domestic HPs	1136	Approved reinforcement work FY25-FY28	Sites	3
Non-domestic HPs	177		New firm capacity	61 MVA
Electric vehicles	8920			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Ashton On Mersey	Switchgear	✓	✗	Flexibility
Barton Dock Rd	Transformer	✗	✗	Reinforce
Broadheath	Transformer	✗	✗	Reinforce
Dumplington	Transformer	✓	✗	Flexibility
Lyons Rd	Transformer & switchgear	✗	✗	Reinforce
Trafford Park North	Transformer	✗	✗	Reinforce

Harker / Hutton GSP Group (1/2)

SP Electricity North West



Customer numbers: Approximately 235,000

Area of supply: Approximately 7,106 km^2

Local authority areas: Cumberland, Westmorland and Furness, Lancaster, North Yorkshire, Northumberland

Main cities, towns and villages: Carlisle, Penrith, Barrow-In-Furness, Workington, Whitehaven, Kendal

No. of primary substations: 93		Evaluation requirements FY25-FY35	Sites: 13 (demand)	
No. of bulk supply points: 10			Capacity: 43.7 MVA (demand)	
Maximum demand	516.9 MVA	Flexible services FY25-FY28	Sites (Spring 25)	20
Generation capacity	488.4 MW		Tendered (Spring 25)	240.1 MVA
Energy demand	2712.4 GWh		Procured (Spring 24-Spring 25)	0.54 MVA
Domestic HPs	1,748	Approved reinforcement work FY25-FY28	Sites	3
Non-domestic HPs	663		New firm capacity	46 MVA
Electric vehicles	18,861			

DNOA decision ... continues

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Alston	HV Transfer	✓	✗	Flexibility
Askerton Castle	HV Transfer	✓	✗	Flexibility
Bentham	HV Transfer	✓	✗	Flexibility
Bowaters	Switchgear (FL)	✗	✗	Reinforce
Burton-in-Kendal MSA	HV Transfer	✗	✗	Reinforce
Carlisle North BSP	Voltage step change	✓	✗	Flexibility
Carlisle BSP	Transformer	✗	✗	Reinforce
Coniston	HV Transfer	✓	✗	Flexibility
Easton	HV Transfer	✓	✗	Flexibility
Egremont	Transformer	✓	✗	Flexibility
Gillsrow	HV Transfer	✓	✗	Flexibility
Harker GSP	Switchgear	✗	✗	Reinforce

Harker / Hutton GSP Group (2/2)

SP Electricity North West

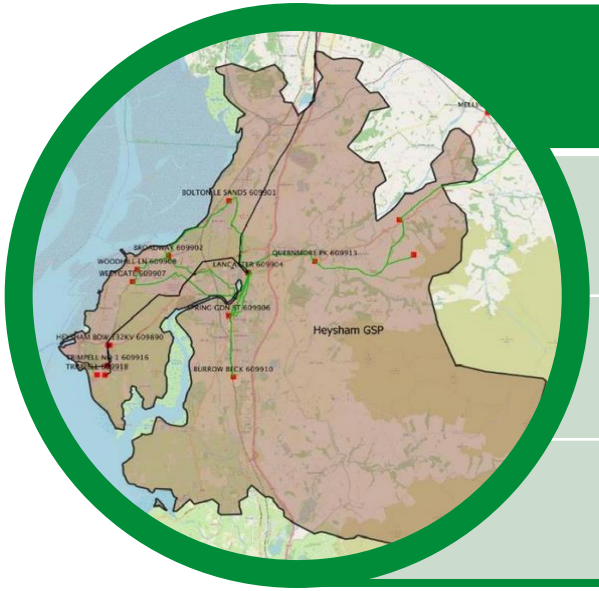
DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
HDA NO1 & HDA NO2	Switchgear (FL)	✗	✗	Reinforce
Ingleton	HV Transfer	✓	✗	Flexibility
Kendal	Transformer	✓	✗	Flexibility
Kendal (Parkside Rd) BSP	Transformer	✗	✗	Reinforce
Killington Lake MSA (New primary substation)	Transformer	✗	✗	Reinforce
Leyland National	Switchgear (FL)	✗	✗	Reinforce
Melling	HV Transfer	✓	✗	Flexibility
Mintsfeet	Incoming 33kV circuit	✓	✗	Flexibility
Morton Park & Pirelli	Switchgear (FL)	✗	✗	Reinforce
Newbiggin on Lune	HV Transfer	✓	✗	Flexibility
Newby	HV Transfer	✓	✗	Flexibility
Newtongate T11&T12 Newtongate T13	Transformer	✓	✗	Flexibility

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Petteril Bank	Transformer & Switchgear	✗	✗	Reinforce
Sebergham	HV Transfer	✓	✗	Flexibility
Sedbergh	Switchgear	✓	✗	Flexibility
Selsmire	HV Transfer	✗	✓	Flexibility
Stainburn & Siddick BSP	Transformer & 33 kV circuit breaker (FL)	✗	✗	Reinforce
Southwaite MSA (New Primary Substation)	Transformer	✗	✗	Reinforce
Tebay MSA (New Primary Substation)	Transformer	✗	✗	Reinforce
Whasset	Transformer	✓	✗	Flexibility
Yealand	HV Transfer	✓	✗	Flexibility
Ambleside - Calgarth-Mintsfeet-Windermere Group	Incoming 33kV circuit	✓	✗	Flexibility
Capontree - Westlinton-Morton Park & Pirelli Group	Incoming 33kV circuit	✓	✗	Flexibility

Heysham GSP

SP Electricity North West



Customer numbers:
Approximately 50,000

Area of supply:
Approximately 330 km^2

Local authority areas:
Lancaster, Wyre

Main cities, towns and villages:
Heysham, Lancaster, Morecambe

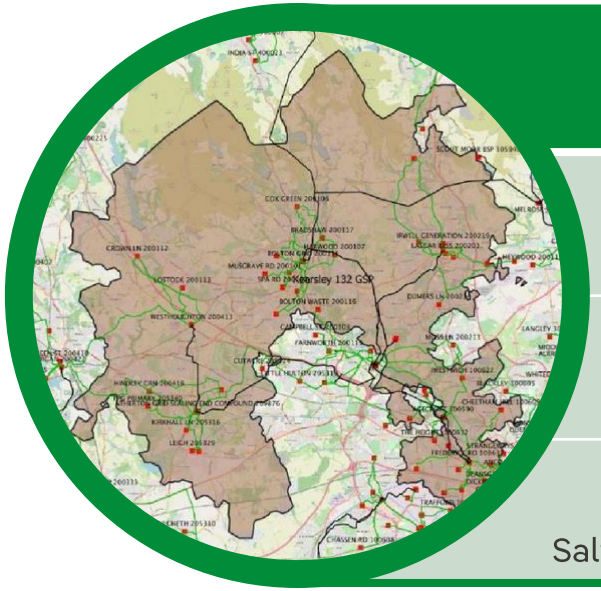
No. of primary substations: 9		Evaluation requirements FY25-FY35	Sites: 5 (demand)	
No. of bulk supply points: 2			Capacity: 35.7 MVA (demand)	
Maximum demand	110 MVA	Flexible services FY25-FY28	Sites (Spring 25)	5
Generation capacity	69.8 MW		Tendered (Spring 25)	83.2 MVA
Energy demand	537.1 GWh		Procured (Spring 24-Spring 25)	0.24 MVA
Domestic HPs	569	Approved reinforcement work FY25-FY28	Sites	2
Non-domestic HPs	120		New firm capacity	0 MVA
Electric vehicles	4081			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Burrow Beck	Transformer	✓	✗	Flexibility
Claughton	HV Transfer	✓	✗	Flexibility
Lancaster	Switchgear	✓	✗	Flexibility
Lancaster BSP	Transformer	✗	✗	Reinforce
Westgate	Transformer	✗	✓	Flexibility
Woodhill Lane	Switchgear	✗	✗	Reinforce
Spring Garden St-Burrow Beck Group	Incoming 33kV circuit	✓	✗	Flexibility

Kearsley GSP (1/2)

SP Electricity North West



Customer numbers:
Approximately 322,000

Area of supply:
Approximately 398 km^2

Local authority areas:
Bolton, Wigan, Salford, Bury, Rochdale, Chorley

Main cities, towns and villages:
Leigh, Bolton, Bury, Salford, Horwich, Atherton, Westhoughton

No. of primary substations: 37		Evaluation requirements FY25-FY35	Sites: 12 (demand)	
No. of bulk supply points: 7			Capacity: 63.8 MVA (demand)	
Maximum demand	490.6 MVA	Flexible services FY25-FY28	Sites (Spring 25)	20
Generation capacity	120.4 MW		Tendered (Spring 25)	96.4 MVA
Energy demand	2654 GWh		Procured (Spring 24-Spring 25)	0.87 (0.02MVA contract pending)
Domestic HPs	3589	Approved reinforcement work FY25-FY28	Sites	5
Non-domestic HPs	478		New firm capacity	354 MVA
Electric vehicles	21,527			

DNOA decision ... continues

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Atherton BSP	Transformer	✗	✗	Reinforce
Barbara St	Incoming 33kV circuit	✓	✗	Flexibility
Blackfriars	Incoming 33kV circuit	✓	✗	Flexibility
Bolton BSP	Transformer Switchgear (FL)	✗	✗	Reinforce
Bolton Rivington MSA (New Primary Substation)	Transformer	✗	✗	Reinforce
Bury BSP	Switchgear (FL)	✗	✗	Reinforce
Chapel Wharf	Switchgear	✗	✓	Flexibility
Charnock Richard MSA (New Primary Substation)	Transformer	✗	✗	Reinforce
Cheetham Hill	Switchgear	✓	✗	Flexibility
Crown Lane	Switchgear	✗	✗	Reinforce

Kearsley GSP (2/2)

SP Electricity North West

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Frederick Rd	Transformer	✓	✗	Flexibility
Frederick Rd BSP	Transformer	✓	✗	Flexibility
Harwood	Incoming 33kV circuit	✗	✗	Load transfer
Radcliffe BSP	Transformer & Switchgear	✗	✗	Reinforce
Robert Hall St	Incoming 33kV circuit	✗	✗	Load transfer
Salford Quays	Transformer	✗	✓	Flexibility
Trinity	Switchgear (FL)	✗	✗	Operational intervention
Westhoughton	Switchgear	✓	✗	Flexibility Reinforce (FL)
Westhoughton BSP	Switchgear (FL)	✗	✗	Reinforce
Agecroft-Frederick Rd BSP Group	Incoming 132 kV circuit	✓	✗	Flexibility

Kearsley Local GSP

Customer numbers:
Approximately 50,000

Area of supply:
Approximately 75 km^2

Local authority areas:
Bolton, Salford, Wigan, Rochdale

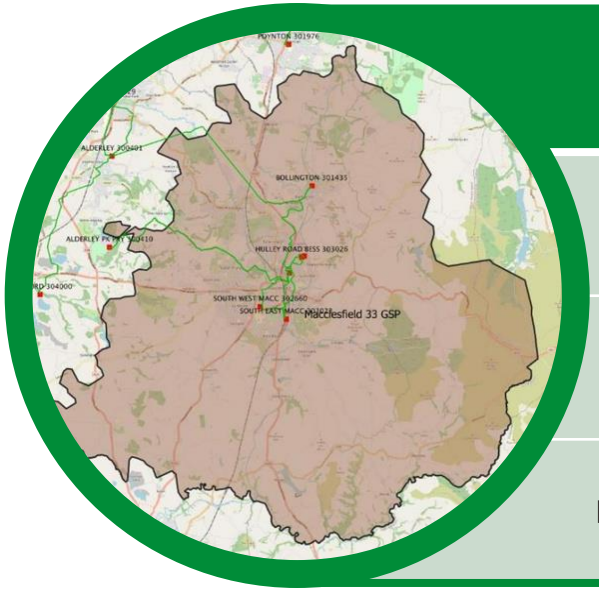
Main cities, towns and villages:
Farnworth, Kearsley, Walkden, Worsley, Little Hulton

No. of primary substations: 11		Evaluation requirements FY25-FY35	Sites: 2 (demand)	
No. of bulk supply points: 0			Capacity: 3 MVA (demand)	
Maximum demand	107.5 MVA	Flexible services FY25-FY28	Sites (Spring 25)	1
Generation capacity	28.3 MW		Tendered (Spring 25)	70.5 MVA
Energy demand	553.5 GWh		Procured (Spring 24-Spring 25)	0.6 MVA (0.04 MVA contract pending)
Domestic HPs	622	Approved reinforcement work FY25-FY28	Sites	0
Non-domestic HPs	85		New firm capacity	0 MVA
Electric vehicles	5792			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Hill Top T11 & T12	Switchgear	✗	✗	Load transfer
Moss Lane	Switchgear	✗	✗	Load transfer

Macclesfield GSP



Customer numbers:
Approximately 36,000

Area of supply:
Approximately 234 km^2

Local authority areas:
Cheshire East, Staffordshire Moorlands

Main cities, towns and villages:
Macclesfield, Bollinbrook, Hurdsfield Langley, Sutton, Gawsworth

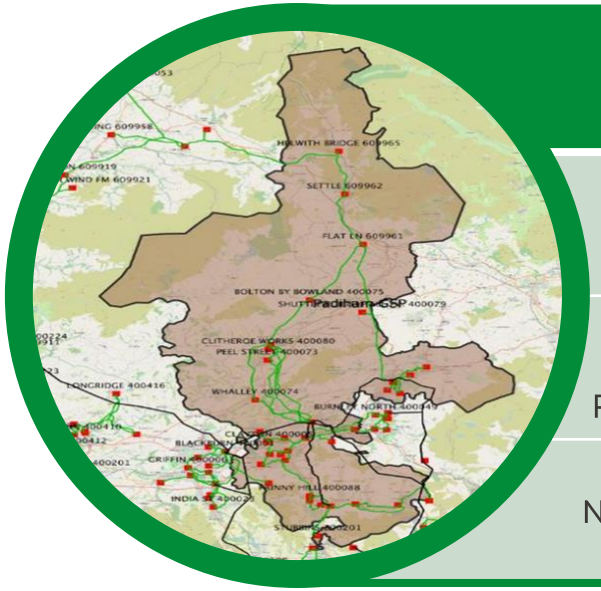
No. of primary substations: 6		Evaluation requirements FY25-FY35	Sites: 1 (demand)	
No. of bulk supply points: 0			Capacity: 0.6 MVA (demand)	
Maximum demand	82.4 MVA	Flexible services FY25-FY28	Sites (Spring 25)	1
Generation capacity	10.6 MW		Tendered (Spring 25)	0.02 MVA
Energy demand	251.8 GWh		Procured (Spring 24-Spring 25)	0 MVA
Domestic HPs	299	Approved reinforcement work FY25-FY28	Sites	0
Non-domestic HPs	67		New firm capacity	0 MVA
Electric vehicles	3426			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
S.W. Macclesfield	Switchgear	✓	✗	Flexibility
Macclesfield BSP	Switchgear (FL)	✗	✗	Operational intervention
Withyfold Drive	Switchgear (FL)	✗	✗	Operational intervention

Padiham GSP

SP Electricity North West



Customer numbers: Approximately 130,000

Area of supply: Approximately 630 km^2

Local authority areas: Hyndburn, Ribble Valley, Burnley, Rossendale, Pendle, North Yorkshire

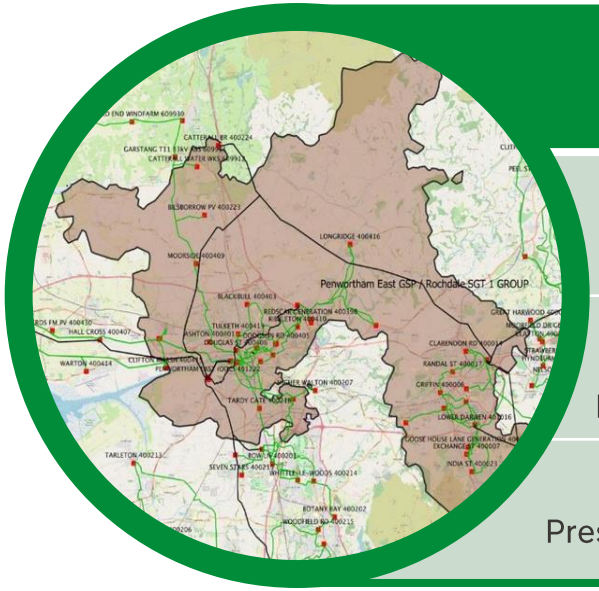
Main cities, towns and villages: Nelson, Settle, Clitheroe, Haslingden, Bolton By Bowland, Huncoat

No. of primary substations: 28		Evaluation requirements FY25-FY35	Sites: 5 (demand)	
No. of bulk supply points: 4			Capacity: 7.1 MVA (demand)	
Maximum demand	213.3 MVA	Flexible services FY25-FY28	Sites (Spring 25)	7
Generation capacity	97.7 MW		Tendered (Spring 25)	60.4 MVA
Energy demand	1292.5 GWh		Procured (Spring 24-Spring 25)	0.87 MVA (0.02 MVA contract pending)
Domestic HPs	652	Approved reinforcement work FY25-FY28	Sites	2
Non-domestic HPs	269		New firm capacity	0 MVA
Electric vehicles	10,061			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Bolton by Bowland	HV Transfer	✓	✗	Flexibility
Church	HV Transfer	✓	✗	Flexibility
Flat Lane	HV Transfer	✓	✗	Flexibility
Great Harwood	Switchgear (FL)	✗	✗	Operational intervention
Helwith Bridge	HV Transfer	✓	✗	Flexibility
Lancaster MSA (New primary substation)	Transformer	✗	✗	Reinforce
Nelson BSP	Interconnector Switchgear (FL)	✗	✗	Reinforce
Peel St	HV Transfer	✓	✗	Flexibility
Phillips Lane	HV Transfer	✓	✗	Flexibility
Ribblesdale T13 & T14	Transformer	✓	✗	Flexibility
Settle	HV Transfer	✓	✗	Flexibility
Spring Cottage	Switchgear (FL)	✗	✗	Reinforce
Strawberry Bank-Hyndburn Rd-Church-Kay St-Blackburn Rd Clayton-Great Harwood Group	Incoming 33kV circuit	✓	✗	Flexibility
Padiham GSP	Switchgear	✗	✗	Reinforce

Penwortham East GSP Rochdale SGT 1



Customer numbers:
Approximately 167,000

Area of supply:
Approximately 493 km^2

Local authority areas:
Hyndburn, Preston, Wyre, Blackburn with Darwen, Ribble Valley

Main cities, towns and villages:
Preston, Blackburn, Darwen, Bamber Bridge

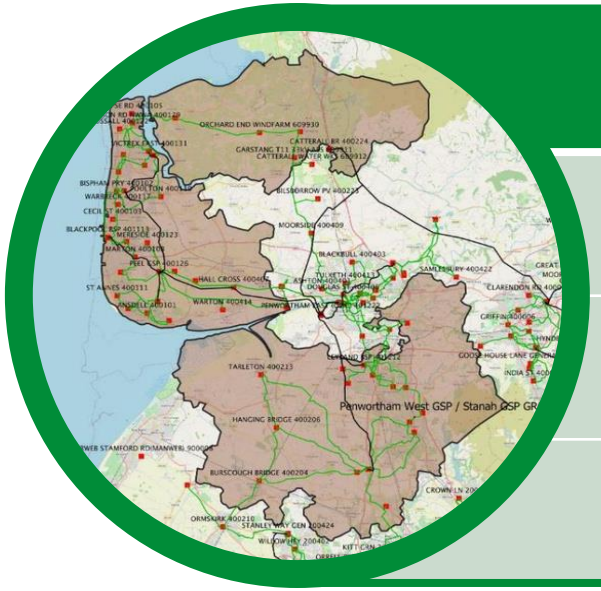
No. of primary substations: 31		Evaluation requirements FY25-FY35	Sites: 3 (demand)	
No. of bulk supply points: 4			Capacity: 35.6 MVA (demand)	
Maximum demand	339.2 MVA	Flexible services FY25-FY28	Sites (Spring 25)	4
Generation capacity	156.7 MW		Tendered (Spring 25)	38 MVA
Energy demand	1529.5 GWh		Procured (Spring 24-Spring 25)	0.02 MVA
Domestic HPs	1193	Approved reinforcement work FY25-FY28	Sites	1
Non-domestic HPs	302		New firm capacity	22.9 MVA
Electric vehicles	13,174			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Catterall Waterworks	HV Transfer	✓	✗	Flexibility
Moorside	Transformer	✓	✗	Flexibility
Preston East BSP	Transformer	✗	✗	Load transfer
St Mary St	Transformer & Switchgear	✗	✗	Reinforce
Ashton (Ribble)-Moorside-Catterall Waterworks Group	Incoming 33kV circuit	✓	✗	Flexibility

Penwortham West GSP – Stanah GSP Group (1/2)

SP Electricity North West



Customer numbers:
Approximately 240,000

Area of supply:
Approximately 844 km^2

Local authority areas:
Blackpool, Chorley, South Ribble, Fylde, Wyre, West Lancashire

Main cities, towns & villages:
Garstang, Fleetwood, Blackpool, Chorley, Leyland, Lytham

No. of primary substations: 45		Evaluation requirements FY25-FY35	Sites: 10 (demand)	
No. of bulk supply points: 7			Capacity: 69.4 MVA (demand)	
Maximum demand	449.2 MVA	Flexible services FY25-FY28	Sites (Spring 25)	13
Generation capacity	220.2 MW		Tendered (Spring 25)	168.5 MVA
Energy demand	2204.7 GWh		Procured (Spring 24-Spring 25)	3.79 MVA (0.03 MVA contract pending)
Domestic HPs	2191	Approved reinforcement work FY25-FY28	Sites	3
Non-domestic HPs	481		New firm capacity	23 MVA
Electric vehicles	19,442			

DNOA decision ... continues

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Botany Bay	HV Transfer	✓	✗	Flexibility
Blackpool BSP	Transformer	✗	✗	Load transfer
Blackpool Airport Enterprise Zone (New primary substation)	Transformer	✗	✗	Reinforce
Chorley South	Transformer	✓	✗	Flexibility
Garstang	Incoming 33kV circuit	✗	✓	Flexibility
Hall Cross	Switchgear	✓	✗	Flexibility
Higher Walton	Transformer	✓	✗	Flexibility
Moss Side & Seven Stars	Incoming 33kV circuit	✓	✗	Flexibility
Norbreck	Transformer & Switchgear	✗	✗	Reinforce
Rossall	HV Transfer	✓	✗	Flexibility

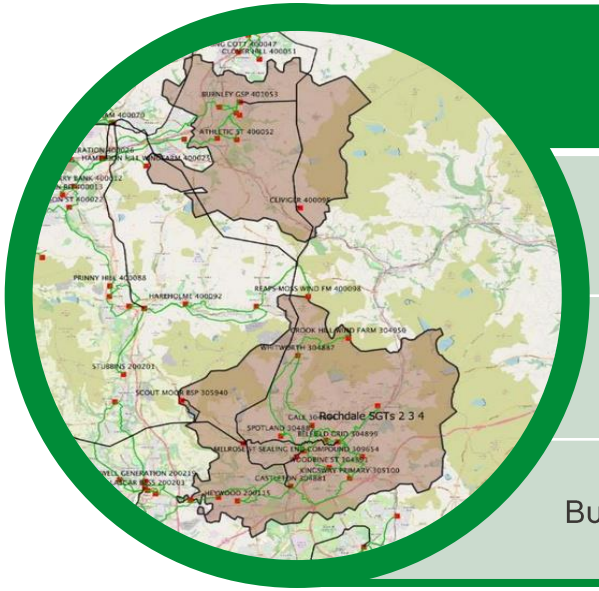
Penwortham West GSP – Stanah GSP Group (2/2)

SP Electricity North West

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Woodfield Rd	Transformer	✗	✗	Reinforce
Bispham BSP	Switchgear (FL)	✗	✗	Reinforce
Leyland BSP	Transformer	✗	✗	Load transfer
Peel BSP	Transformer	✓	✗	Flexibility
Wrightington BSP	Transformer	✗	✗	Load transfer
Bow Lane-Whittle Le Woods-Buckshaw-Botany Bay Group	Incoming 33kV circuit	✓	✗	Flexibility

Rochdale SGTs 2 3 4



Customer numbers:
Approximately 155,000

Area of supply:
Approximately 225 km^2

Local authority areas:
Burnley, Pendle, Rochdale, Bury

Main cities, towns and villages:
Burnley, Whitworth, Rochdale, Heywood, Belfield, Castleton

No. of primary substations: 17		Evaluation requirements FY25-FY35	Sites: 1 (demand)	
No. of bulk supply points: 4			Capacity: 16.5 MVA (demand)	
Maximum demand	192.5 MVA	Flexible services FY25-FY28	Sites (Spring 25)	3
Generation capacity	91.2 MW		Tendered (Spring 25)	0.09 MVA
Energy demand	788.6 GWh		Procured (Spring 24-Spring 25)	0 MVA
Domestic HPs	673	Approved reinforcement work FY25-FY28	Sites	2
Non-domestic HPs	166		New firm capacity	54.9 MVA
Electric vehicles	7084			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Belfield BSP	Transformer	✗	✓	Flexibility
Littleborough	Transformer & Switchgear	✗	✗	Reinforce
Northern Gateway (New primary substation)	Transformer	✗	✗	Reinforce
South Heywood (New primary substation)	Transformer	✗	✗	Reinforce

South Manchester GSP

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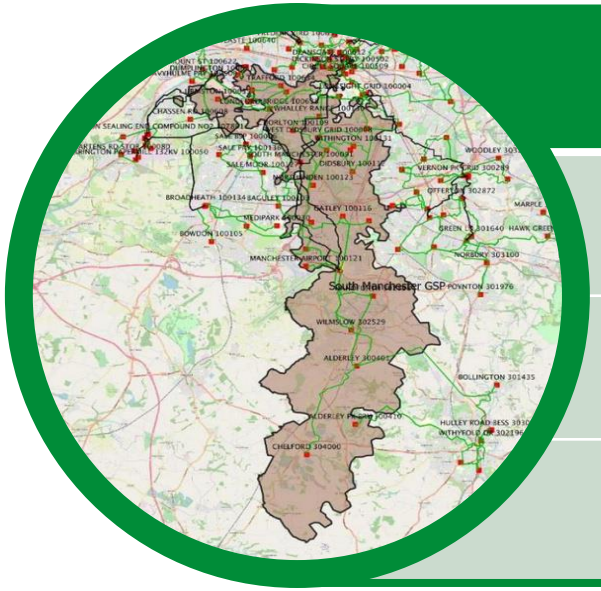


Customer numbers:
Approximately 156,000

Area of supply:
Approximately 163 km^2

Local authority areas:
Cheshire East, Manchester, Trafford, Stockport

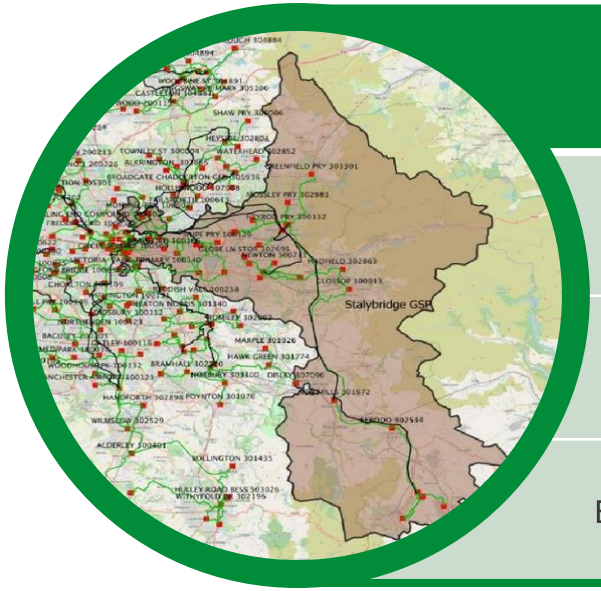
Main cities, towns & villages:
Alderley Edge, Wilmslow, Cheadle, Stretford, Didsbury, Trafford

No. of primary substations: 27		Evaluation requirements FY25-FY35	Sites: 4 (demand)	
No. of bulk supply points: 4			Capacity: 18.5 MVA (demand)	
Maximum demand	364.4 MVA	Flexible services FY25-FY28	Sites (Spring 25)	1
Generation capacity	56.7 MW		Tendered (Spring 25)	8.7 MVA
Energy demand	1541.6 GWh		Procured (Spring 24-Spring 25)	0.84 MVA
Domestic HPs	2223	Approved reinforcement work FY25-FY28	Sites	0
Non-domestic HPs	257		New firm capacity	0 MVA
Electric vehicles	11,041			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Chester Rd T11 & T12	Transformer	✗	✓	Flexibility
Fallowfield	Switchgear	✓	✗	Flexibility
Moss Nook BSP	Switchgear (FL)	✗	✗	Reinforce
Trafford	Transformer	✗	✓	Flexibility
West Didsbury	Switchgear (FL)	✗	✗	Reinforce
West Didsbury BSP	Switchgear	✗	✗	Reinforce
Withington	Transformer	✓	✗	Flexibility
Didsbury -Withington-Fallowfield Group	Incoming 33kV circuit	✓	✗	Flexibility

Stalybridge GSP



Customer numbers:
Approximately 216,000

Area of supply:
Approximately 575 km^2

Local authority areas:
Manchester, Oldham, Tameside, High Peak, Stockport, Derbyshire

Main cities, towns & villages:
Buxton, Glossop, Hyde, Stalybridge, New Mills, Droylsden, Ashton

No. of primary substations: 28		Evaluation requirements FY25-FY35	Sites: 6 (demand)	
No. of bulk supply points: 6			Capacity: 12.7 MVA (demand)	
Maximum demand	384.4 MVA	Flexible services FY25-FY28	Sites (Spring 25)	4
Generation capacity	118 MW		Tendered (Spring 25)	22.5 MVA
Energy demand	1856.9 GWh		Procured (Spring 24-Spring 25)	2.23 MVA
Domestic HPs	1948	Approved reinforcement work FY25-FY28	Sites	1
Non-domestic HPs	318		New firm capacity	36.8 MVA
Electric vehicles	14,186			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Ardwick	Transformer	✓	✗	Flexibility
Bradford	Switchgear (FL)	✗	✗	Operational intervention
Buxton BSP	Transformer	✗	✓	Flexibility
Droylsden BSP	Switchgear (FL)	✗	✗	Operational intervention
Hattersley	Transformer	✓	✗	Flexibility
Mayfield (New primary substation)	Transformer	✗	✗	Reinforce
Monsall	Transformer	✗	✓	Flexibility
Newton	Transformer	✓	✗	Flexibility
Openshaw	Transformer	✓	✗	Flexibility
Queens Park	Incoming 33kV circuit	✓	✗	Flexibility
Stuart St	Transformer	✓	✗	Flexibility

Washway Farm / Kirkby GSP

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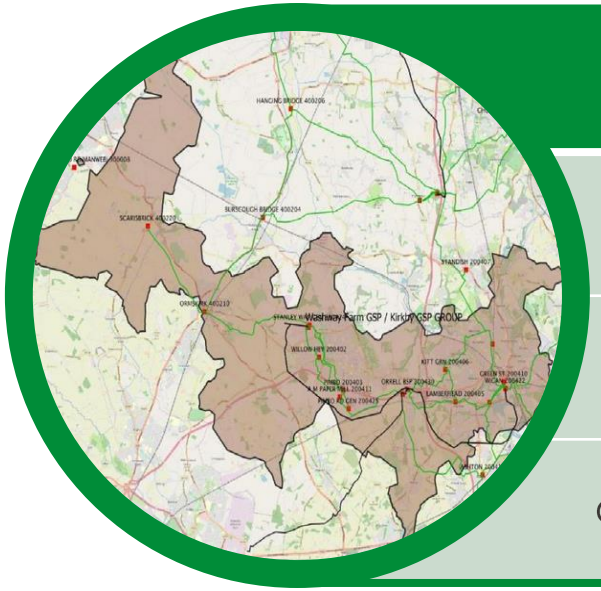


Customer numbers: Approximately 74,000

Area of supply:
Approximately 204 km^2

Local authority areas:
Wigan, St Helens, West Lancashire

Main cities, towns & villages:
Ormskirk, Skelmersdale, Scarisbrick, Orrell, Wigan

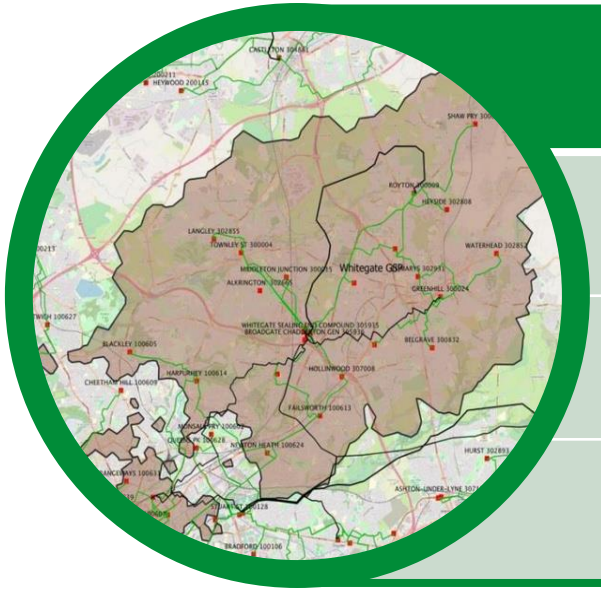
No. of primary substations: 12		Evaluation requirements FY25-FY35	Sites: 2 (demand)	
No. of bulk supply points: 3			Capacity: 3.1 MVA (demand)	
Maximum demand	173.3 MVA	Flexible services FY25-FY28	Sites (Spring 25)	6
Generation capacity	100 MW		Tendered (Spring 25)	11.2 MVA
Energy demand	847.7 GWh		Procured (Spring 24-Spring 25)	0 MVA
Domestic HPs	671	Approved reinforcement work FY25-FY28	Sites	0
Non-domestic HPs	134		New firm capacity	0 MVA
Electric vehicles	7161			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Green St T12 & T13	Incoming 33kV circuit	✓	✗	Flexibility
Kitt Green	Transformer	✗	✗	Load transfer
Scarisbrick	HV Transfer	✓	✗	Flexibility
Skelmersale	Switchgear (FL)	✗	✗	Operational intervention
Skelmersdale BSP	Switchgear (FL)	✗	✗	Reinforce
Warrington MSA (New primary substation)	Transformer	✗	✗	Reinforce
Wigan BSP	Voltage step change	✓	✗	Flexibility

Whitegate GSP

SP Electricity North West



Customer numbers:
Approximately 179,000

Area of supply:
Approximately 103 km^2

Local authority areas:
Manchester, Oldham, Tameside
Bury, Rochdale, Salford

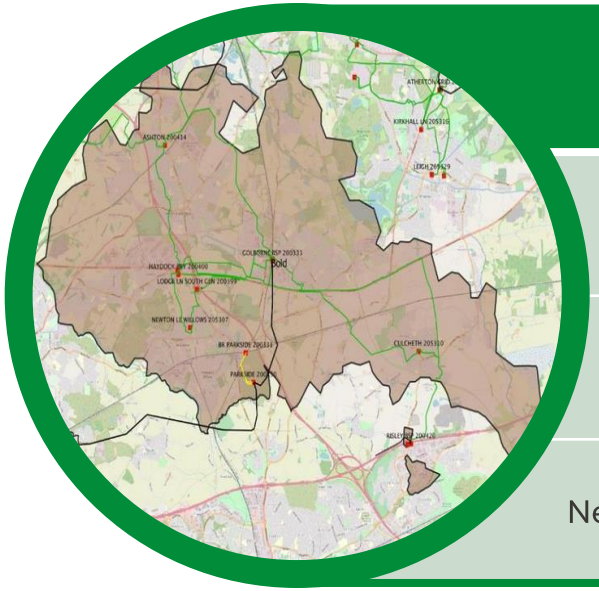
Main cities, towns & villages:
Royton, Oldham, Shaw, Failsworth
Chadderton

No. of primary substations: 23		Evaluation requirements FY25-FY35	Sites: 4 (demand)	
No. of bulk supply points: 4			Capacity: 5.9 MVA (demand)	
Maximum demand	245.1 MVA	Flexible services FY25-FY28	Sites (Spring 25)	4
Generation capacity	73.4 MW		Tendered (Spring 25)	0.12 MVA
Energy demand	1324.7 GWh		Procured (Spring 24-Spring 25)	40 MVA
Domestic HPs	1660	Approved reinforcement work FY25-FY28	Sites	0
Non-domestic HPs	231		New firm capacity	0 MVA
Electric vehicles	9844			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Ancoats North T11 & T12	Switchgear	✓	✗	Flexibility
Ancoats North T14	Transformer	✓	✗	Flexibility
Birch MSA (New primary substation)	Transformer	✗	✗	Reinforce
Cannon Street	Switchgear (FL)	✗	✗	Operational intervention
Greenhill	Switchgear (FL)	✗	✗	Reinforce
Newton Heath	HV Transfer	✗	✓	Flexibility
Royton BSP	Switchgear (FL)	✗	✗	Reinforce
Ancoats North T11 & T12-Cannon St-Strangeways-Ancoats North T14 Group	Incoming 33kV circuit	✓	✗	Flexibility
Blackley-Harpurhey Group	Switchgear	✓	✗	Flexibility

Bold (Golborne BSP)



Customer numbers:
Approximately 34,000

Area of supply:
Approximately 92 km^2

Local authority areas:
St Helens, Wigan, Salford, Warrington

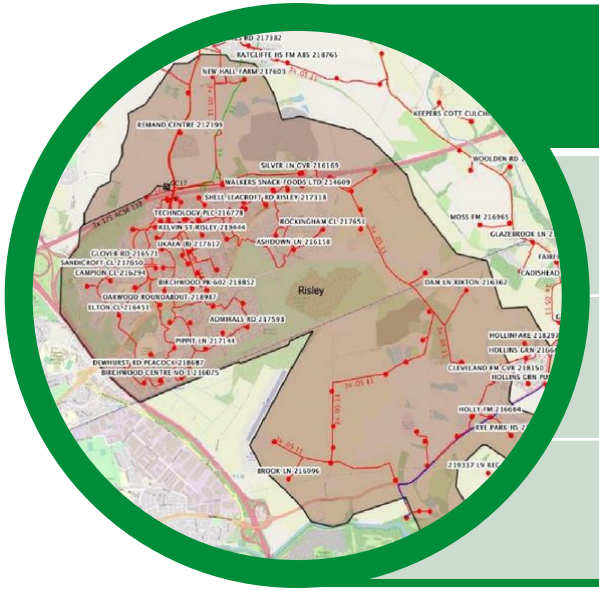
Main cities, towns and villages:
Newton-le-Willows, Culcheth, Golborne, Ashton-In-Makerfield

No. of primary substations: 5		Evaluation requirements FY25-FY35	Sites: 1 (demand)	
No. of bulk supply points: 0			Capacity: 2.9 MVA (demand)	
Maximum demand	71.6 MVA	Flexible services FY25-FY28	Sites (Spring 25)	2
Generation capacity	49.7 MW		Tendered (Spring 25)	0.08 MVA
Energy demand	357.4 GWh		Procured (Spring 24-Spring 25)	0 MVA
Domestic HPs	229	Approved reinforcement work FY25-FY28	Sites	1
Non-domestic HPs	48		New firm capacity	0 MVA
Electric vehicles	3443			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Ashton (Golborne)	Transformer	✓	✗	Flexibility
Newton-Le-Willows	33kV circuit	✗	✗	Reinforce

Risley GSP



Customer numbers:
Approximately 5,000

Area of supply:
Approximately 20 km^2

Local authority areas:
Warrington

Main cities, towns and villages:
Birchwood, Risley, Hollins Green

No. of primary substations: 1		Evaluation requirements FY25-FY35	Sites: 0 (demand)	
No. of bulk supply points: 0			Capacity: 0 MVA (demand)	
Maximum demand	14.5 MVA	Flexible services FY25-FY28	Sites (Spring 25)	0
Generation capacity	6.1 MW		Tendered (Spring 25)	0 MVA
Energy demand	65 GWh		Procured (Spring 24-Spring 25)	0 MVA
Domestic HPs	31	Approved reinforcement work FY25-FY28	Sites	0
Non-domestic HPs	13		New firm capacity	0 MVA
Electric vehicles	470			

DNOA decision

Site	Need	Tendered for flex	Signposted for flex	DNOA recommendation
Risley	Incoming 33kV circuit Switchgear (FL)	✓	✗	Flexibility Reinforce (FL)

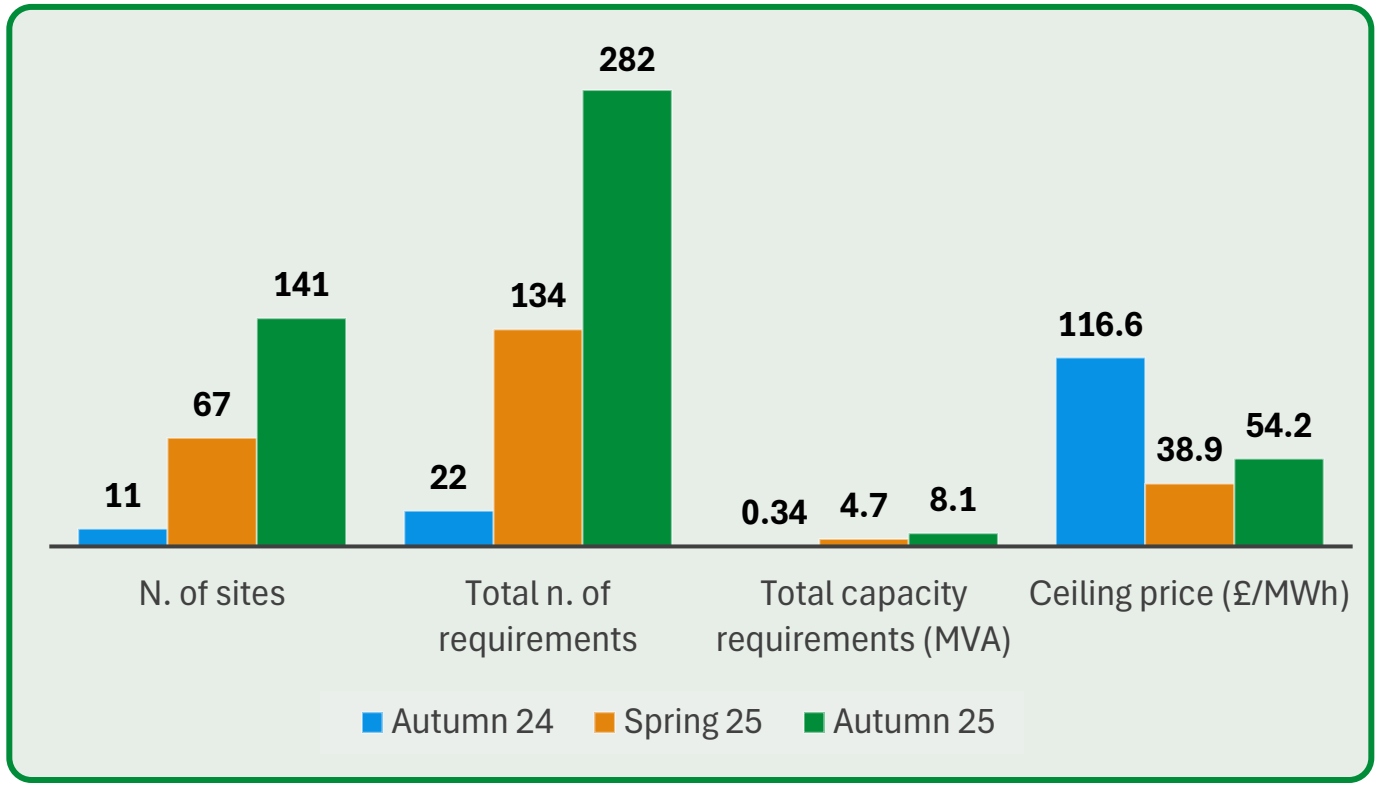
4. Flexibility services

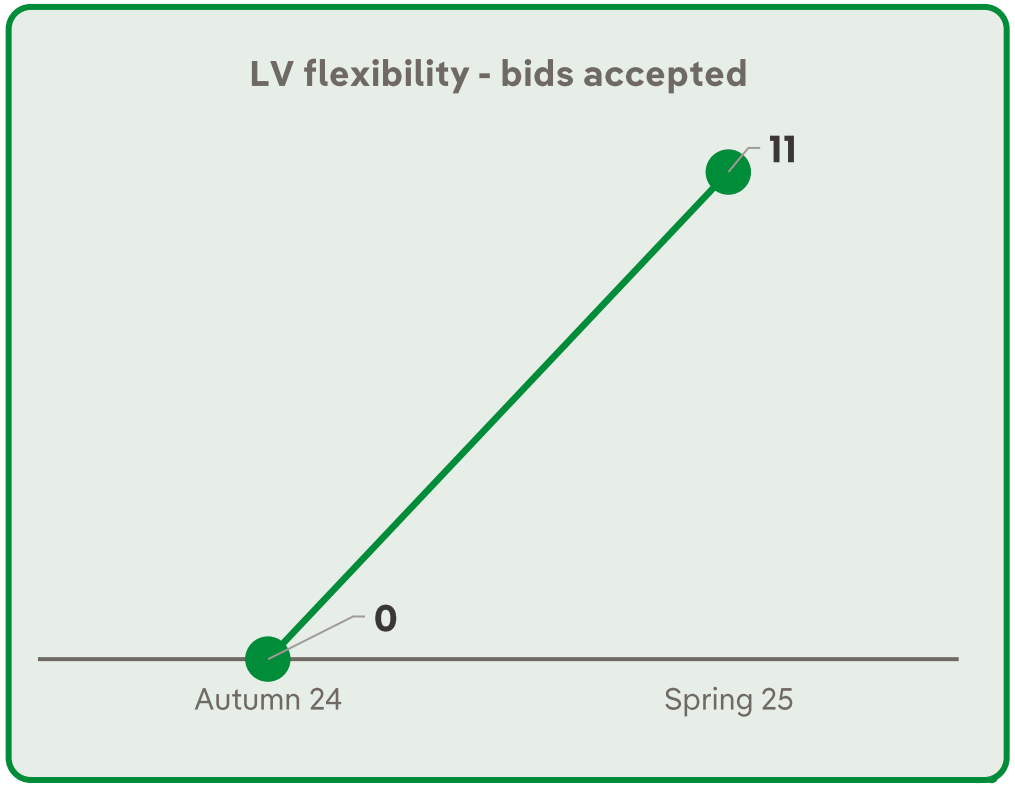
Our new flexibility services – LV flexibility

For the first time last year, we tendered for LV flexibility services and prepared for scaling up to expand our flexibility service opportunities to domestic, small commercial and local community providers.

This gives us access to a broader range of providers, ensuring greater inclusivity and competition. Our autumn 2024 tender targeted our first 22 LV requirements (among all flexibility products tendered) across 11 secondary substations, serving over 5,000 customers, through two types of flexibility service products – Peak Reduction and Scheduled Utilisation.

The requirements then significantly increased in our spring 2025 tender and even more in the latest autumn 2025 tender to 282 in total across 141 local areas (i.e., LV substation feeding areas).





Spring 2025 tender example – summary of locations for LV flexibility

SP Electricity North West

In our spring 2025 tender, 67 secondary substations were identified for LV flexibility services for Peak Reduction and Scheduled Utilisation products. Similar information can be found in our autumn 2025 tender (enwl.co.uk/flex-tender)

LV sites	Postcodes
Alder Rd	PR2 6
Andrew St	OL5 0 ,OL5 9
Armistead St	WN2 3
Ash Gr	OL15 8
Ashford Walk	OL9 8, OL9 9
Back Buller St	LA1 2
Back Rochdale Rd	BL0 0, BL9 7
Back Yates St	WN7 5
Barley Hall	OL10 1, OL10 4
Barton Grange	PR3 5
Berwick Ave	M19 1, SK4 3
Bk Manchester Rd	M15 6, M28 3, M38 9
Bolefoot	LA9 7
Borron Rd	WA12 0

LV sites	Postcodes
Brandlesholme Rd N	BL8 1, BL8 3
Brook Terr	M12 4, M12 5, M13 0, M28 3
Carlton Ave	M14 4, M14 5, M14 7
Carlton St	BL4 7
Church Hill	PR6 7
Clifton Arms (Blackpool)	FY3 9, FY4 4
Common Edge Sth	BL1 1, BL6 6, FY4 5
Coronation Dr	WN7 2
Dalton Rd Morecambe	LA3 1, LA3 4
Dorset St	FY1 6, FY4 3
Ennerdale Rd	CA15 7, CA15 8
Esk St	CA2 5, CA7 4
Falmouth Cres	SK5 8
Far Moor	WN5 7, WN5 8

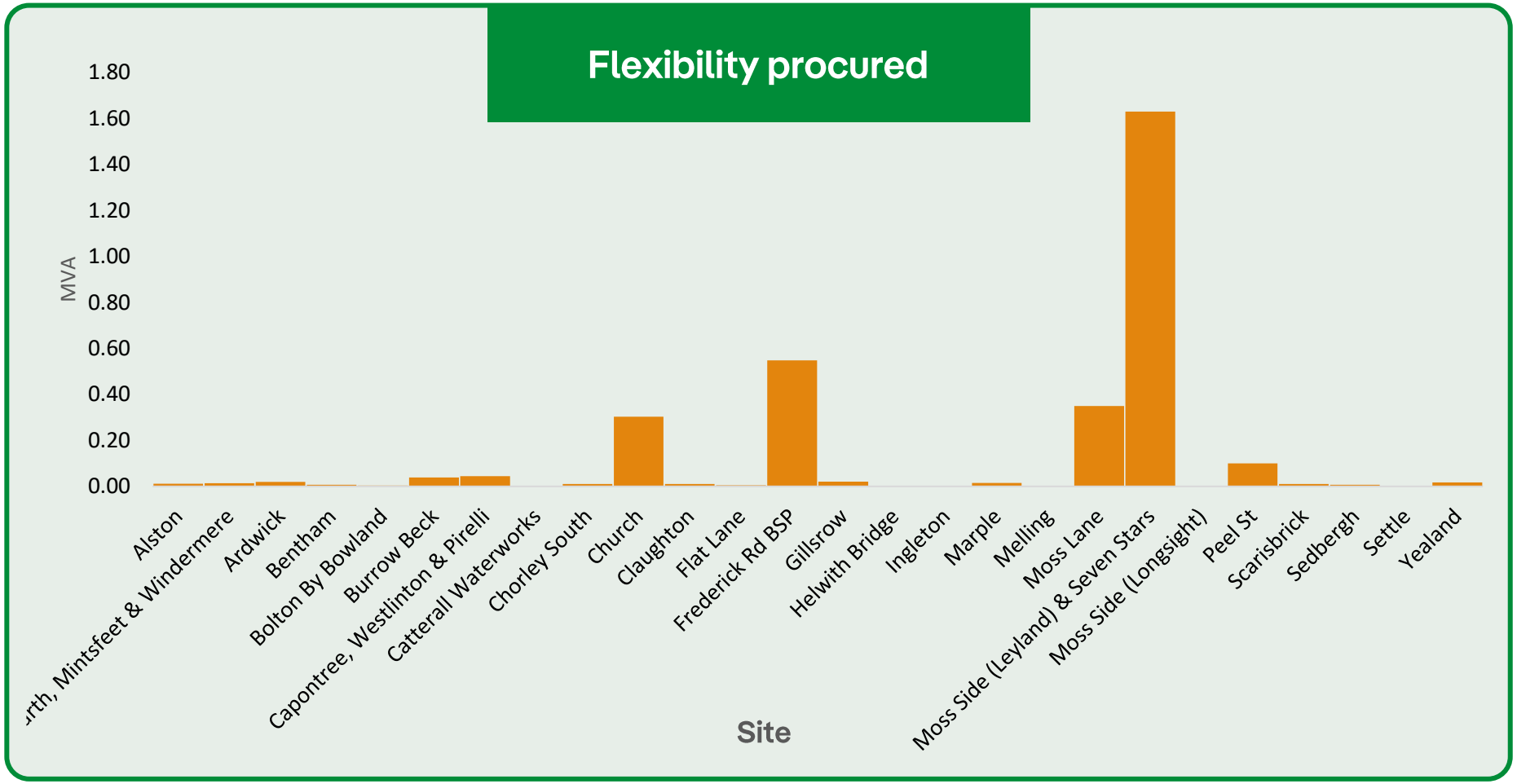
LV sites	Postcodes
Girls Grammar School	BB7 2
Glenmoor Rd	SK17 7
Goldsmith Rd	SK5 6
Grayson Flats	WN1 1, WN1 2, WN2 3
Hawthorne Ave	WN2 4
Hope Carr Rd	WN7 3
Hunters Rd	PR25 2, PR25 5
Ilford St	M11 4
Incline Rd	OL8 3, OL8 4
Johns Ave	WA11 0
Kershaw St	OL2 7, OL2 8
Kingston Ave	FY4 1, FY4 2
Lancaster Ln W	PR25 2, PR25 4, PR25 5
Lincoln Cl	SK10 3, SK10 4

LV sites	Postcodes
Lyons Fold	M33 6, M33 7, M50 1
Manchester Rd	WN7 2
Meadoway	PR4 5, PR4 6
Melrose Ave	WN7 5
Moor Rd	CA14 1, CA14 4
Moorgate	LA1 3
Moreton Mill	BL1 5, BL1 6, BL3 2, BL3 3, BL3 6, BL6 7, BL7 9
Moss Ln Swinton	M27 6, M27 9
North Ave	BL8 4, BL9 5
Old Oak	PR5 0, PR5 4
Queens Pk Rd	OL10 4
Ridgeway	BL6 5
Scott Dr	L39 1, L40 7
Spendmore Ln W	PR7 5

LV sites	Postcodes
St Georges St	M29 8
Station Rd Blackrod	BL4 8, BL6, BL6 1, BL6 5, BL7 0
Sycamore Est	CA7 8, P, PR1 9
Thornhill	PR6 0, PR6 7
Union Bridge	WN1 1, WN4 9, WN5 9
Union Rd	BB4 5, BB4 6, BB4 8
Victoria St	BL5 3, BL7 9, M13 9, M27 5, OL6 6, SK14 4, SK8 6
Wash Brow	BL8 1, BL8 3
Weddicar Gdn	CA25 5
Westwood Ln	WN3, WN3 4
Wordsworth Rd	OL1 4, OL11 5, OL9 6

Flexibility services procured and dispatched

Since the start of RIIO-ED2, a total of 2.63 MW peak flexibility has been contracted across multiple sites. A detailed overview of the flexibility services dispatched across the different products is reported in the table below.



Flexibility dispatched in the 2024/25 regulatory year

Flexibility product	Total dispatched (MWh)
Peak reduction	4320
Operational utilisation	0.041
Operational utilisation +Variable availability	29.26
Total	4349.30

Example of flexibility service benefits

We do not have significant constraints within our network,
and the majority of flexibility products are focused on ahead-of-need use of flexibility services.

Moss Side (Leyland) & Seven Stars is an example of an EHV site where we managed to procure all the capacity required to be technically able to defer network reinforcement at a flexibility service cost below the ceiling price. This allows to release the required capacity faster and more cost efficiently on this site for the foreseeable capacity needs and postpone potential conventional reinforcement in ED3 (2028-2033).

This represent one of the cases where flexibility is working for our customers as the procurement of flexibility allowed for 23 MVA to be released, resulting in a total of £0.12m* benefit for our customers.

Site	Counterfactual released (MVA)	Cost deferred beyond ED2 (£m)	Network benefits (£m)
Moss Side (Leyland) & Seven Stars	23	1.32	0.12

**Benefits evaluated in terms of whole life net present value (NPV).*

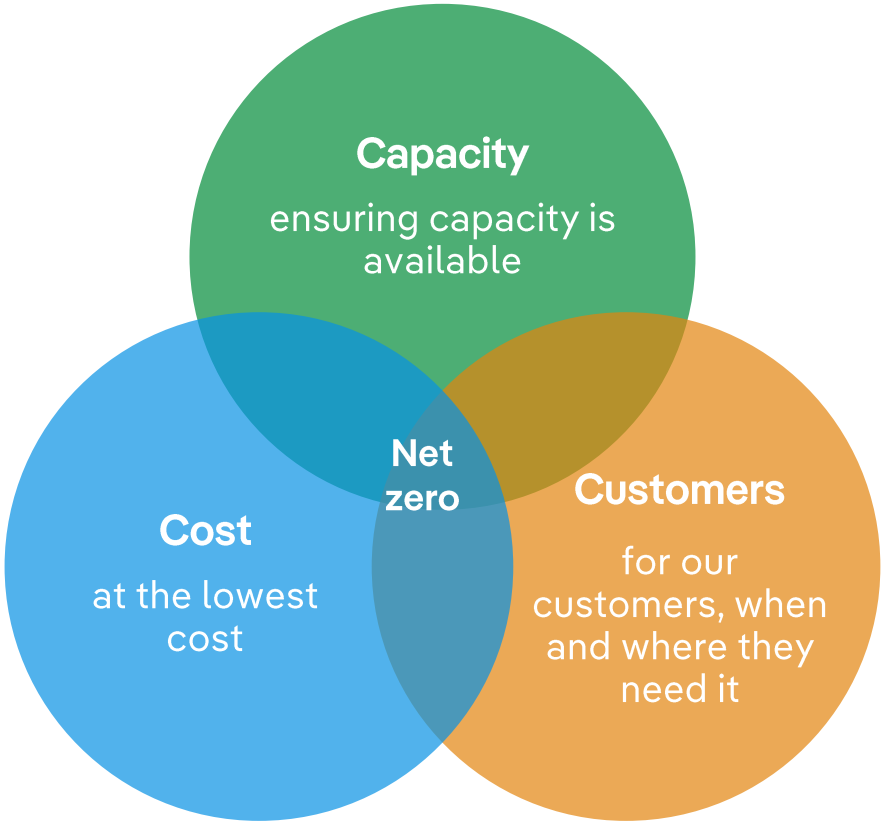
5. Optioneering between different conventional reinforcement options

Strategic approach in network capacity provision

Our goal is to provide our customers with **reliable and affordable access** to network capacity **when and where they need it**.

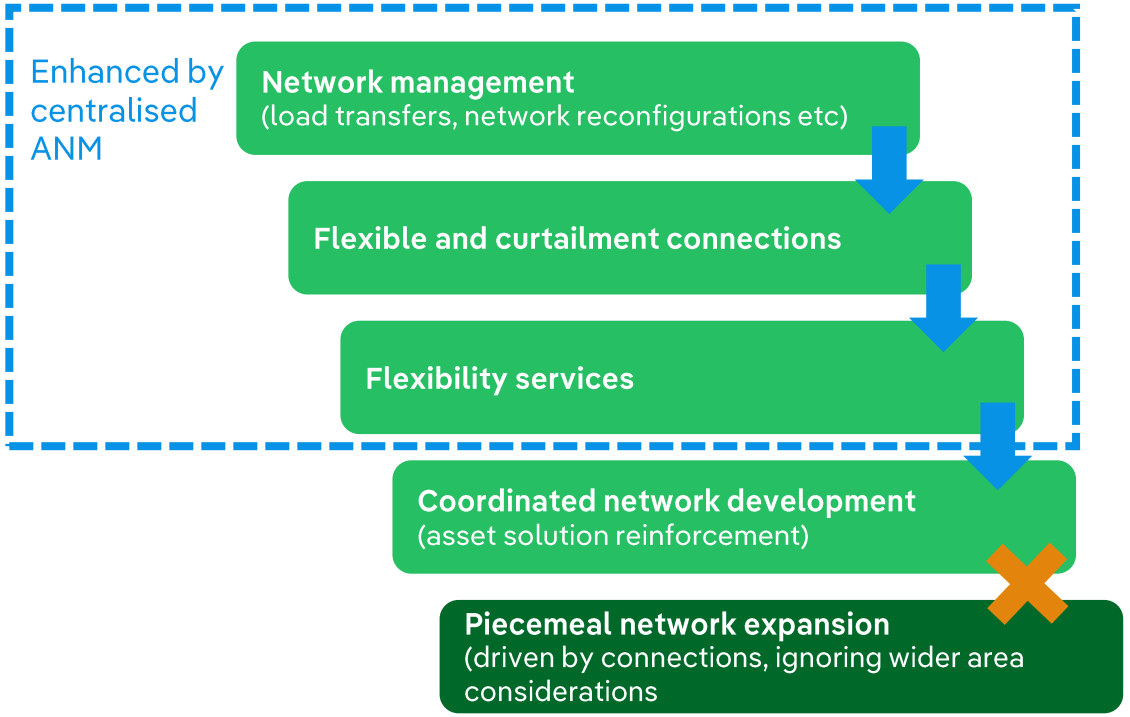
We achieve this through a strategic approach that focuses on:

- **Supporting economic growth**: Through our continuous engagement with local stakeholders, we make sure that LAEP and other economic growth plans are incorporated into our capacity planning.
- **Enabling net zero:** We will invest in network upgrades and flexibility solutions that support the growth of renewable energy sources and distributed energy resources to facilitate the timely transition to net zero.
- **Transparent uncertainty management**: We will engage with stakeholders to gather insights and develop plans that can adapt to changing conditions.
- **Efficient network development**: We will make informed investment decisions that **optimise network capacity and minimise costs to customers** for the release of this capacity. We will utilise data analytics and tools to accurately develop and assess cost-effective solutions to meet network needs.
- We take a **whole-system approach** to our work, considering the interconnectedness of different systems and the impact of our decisions.



DNOA is more than just comparing a reinforcement and a flexibility service option – it optimises in terms of cost efficiencies and timely capacity release across all available asset and non-asset options.

Optimisation of capacity release



- Our capacity strategy prioritises '**zero cost' capital expenditure** options to release capacity in **very short lead times**, such as:
  - Releasing capacity via **network management**, including network reconfigurations (i.e., moving normally open points, load transfers etc.).
  - Utilising **flexible connections** (i.e., connect and manage, non-firm connections etc.) and **curtailable connections**.
- Following the options that do not have any capital costs associated with network investment or flexibility procurement (zero cost options), our flexibility first approach prioritises **flexibility services** in all cases where they are more cost efficient to defer network reinforcement.

When capacity requirements cannot be met by any of the above-mentioned non-asset solutions, our next step is to proceed with **coordinated network development** through **network reinforcement**, focusing on wider network areas and aiming to release capacity through **minimum cost combinations of interventions**.

This can only be achieved through **whole-system thinking** and holistic understanding of the wider (network) needs, by engaging and working closely with other energy vectors and local authorities, as well as by engaging with the NESO and the RESP to reflect their inputs and insights as whole-system planning co-ordinators.

SP ENW Real Options CBA ● Flexibility Hub ● CEM Tool User Guide ● SP ENW DNOA methodology

Focus on decision-making on asset solutions: Coordinated network development for optimised capacity release

SP Electricity North West

We consider the **range of network options** to create future capacity based on location, magnitude, nature and timing dependencies.

Network planners consider practical real life asset solutions that release capacity across wider areas and consider multiple load (DFES driven and from connection studies) and non-load (asset replacement, reliability etc) requirements.

This optioneering process provides a view of future development requirements and is **supported** in the near term by a **comprehensive CBA** to underpin our decision-making as below.

CBA tool	Overview
Ofgem's CBA	Used to compare all potential options to the identified constraint but not tailored to flexibility services. The most cost-effective solution identified through CBA evaluation can then be used as the counterfactual for evaluation of a flexibility solution. This CBA tool is predominantly used for RIIO-ED2 business plan submissions.
Common Evaluation Methodology (CEM) tool	Used to identify the ceiling price available for flexibility on an individual site basis. This price is derived from the most cost-effective solution identified as the counterfactual from the Ofgem CBA.
SP ENW's Real Options CBA (ROCBA)	Used to quantify benefits in terms of cost and risk assessments accounting for uncertainties in future peak demand growth as well as other uncertainties (e.g. energy prices, weather conditions etc), thus providing further insights on decision making. ROCBA paved the way for a more simplified and standardised CEM tool across DNOs that also embeds all scenarios.

While the previous section shows where flexibility could be a feasible option, the next section sets out the **comparison of asset solutions** and the insights from Ofgem's CBA and SP Electricity North West's ROCBA tools.

Case study: Wigan BSP*

SP Electricity North West

Background information

Wigan BSP substation, to the west of Greater Manchester, supplies over 34,000 customers. It is one of three BSPs supplied from Washway Farm and Kirkby GSP.

Wigan BSP comprises 2 x 132/33kV 90 MVA grid transformers (GT) and has a firm capacity of 72 MVA.

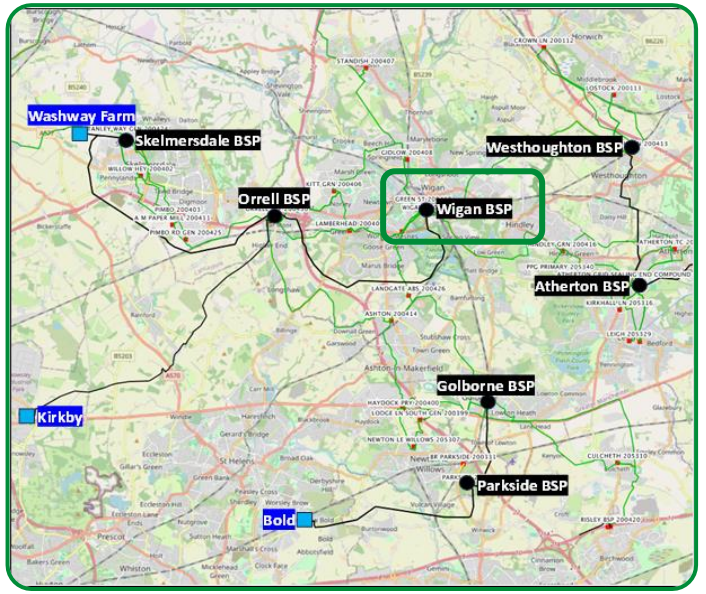
The firm capacity is significantly limited by the voltage step change for the loss of one of the grid transformers. This is exacerbated due to:

- long route length (over 20km) of the 132 kV circuits from Kirkby and Washway Farm GSPs and
- the non-standard high impedance of one of the grid transformers, GT2.

The Best View scenario forecasts that the demand at Wigan BSP will exceed firm capacity by FY28.**

Moreover, given the current and future Health Scores and Indices (HI) for the GTs at Wigan BSP based on the latest CNAIM and flood risk assessment carried out, there are no non-load related drivers for this project.

**Analysis based on LRR submitted in January 2025*
***based on DFES 2023 (published in early 2024).*



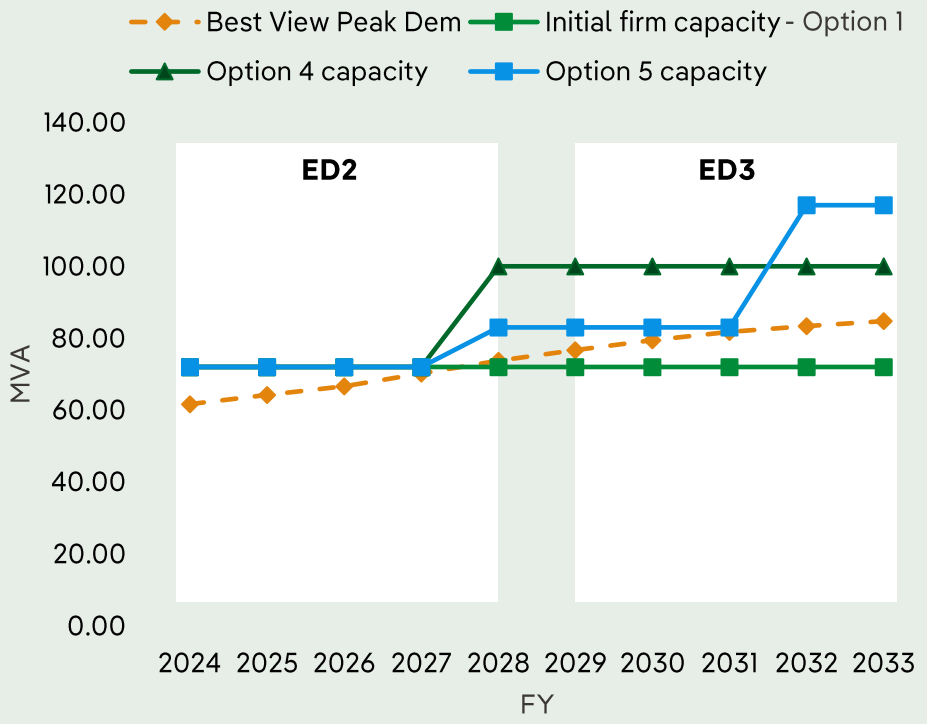
Case study: Wigan BSP

Optioneering

The following options have been considered and assessed:

Option number	Options considered	Comment
1 – DN	'Do nothing' – no intervention	Does not solve capacity issue
2 – LT	Load transfer	Does not solve voltage step issue and presents operational issues at 6.6kV
3 – GT	Replace GT2 with standard impedance GT	Increases firm capacity by 11 MVA to 83 MVA. Additional capacity created would be utilised by FY33, only postponing further intervention
4 – SG	Install 5 x bays of 132kV switchgear at Wigan BSP (or Orrell BSP)	Provides capacity to 2038 by 28 MVA to 100 MVA. It also releases capacity at Orrell BSP by 27 MVA
5 – GT+SG	Install 5 x bays of 132kV switchgear at Wigan BSP and replace GT2*	Provides an additional capacity of 17 MVA compared to option 4, reaching 117 MVA. It also increases the firm capacity at Orrell BSP by 27 MVA up to 105 MVA

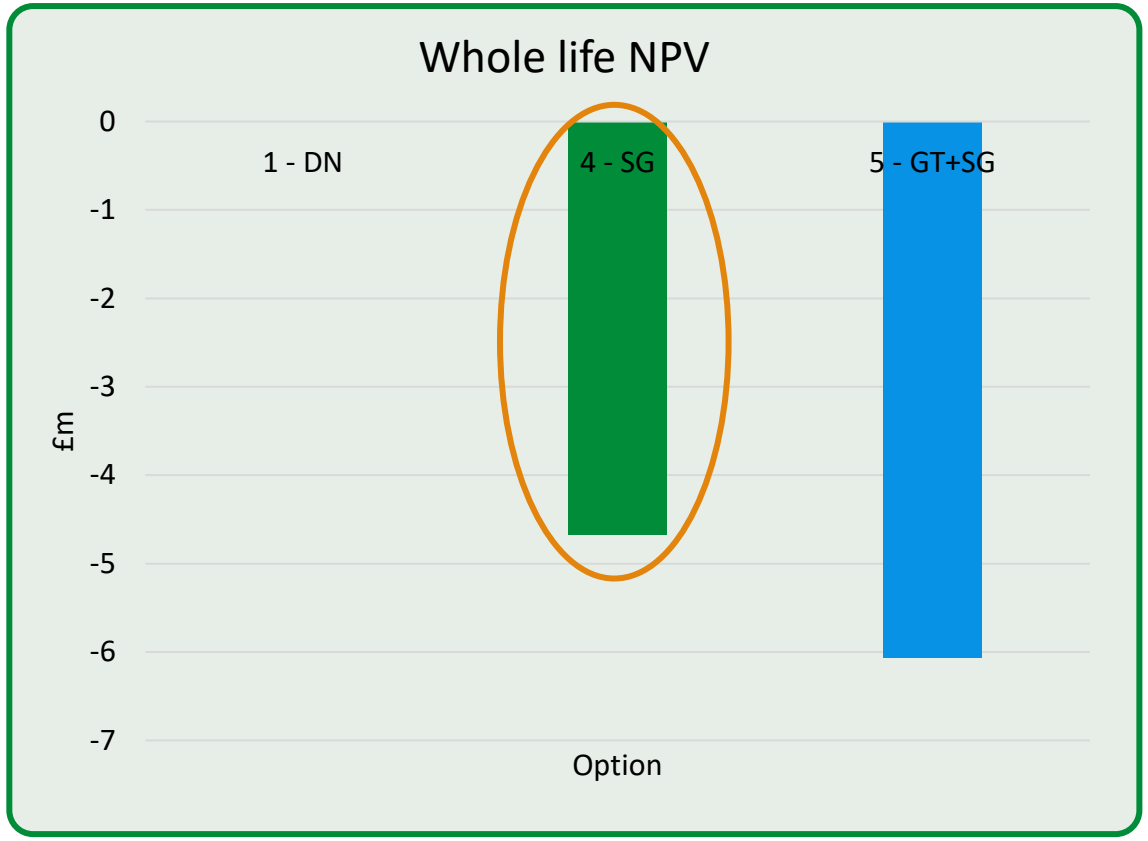
Only Options 4 and 5 can solve the firm capacity issue until the end of ED3. Option 1 is our 'baseline'.



Analysis based on LRR submitted in January 2025
**At present GT2 is only forecast to reach HI2 by FY33 and therefore unlikely due for asset replacement by FY38.*

Case study: Wigan BSP

Ofgem's CBA – Best View scenario



Analysis based on LRR submitted in January 2025

Option 4, i.e., Install 5 x bays of 132kV switchgear at Wigan BSP; this is the **least-cost solution** that solves the firm capacity issue.

However, the future is uncertain. Is this solution robust enough and still the most suitable one if a different scenario unfolds?

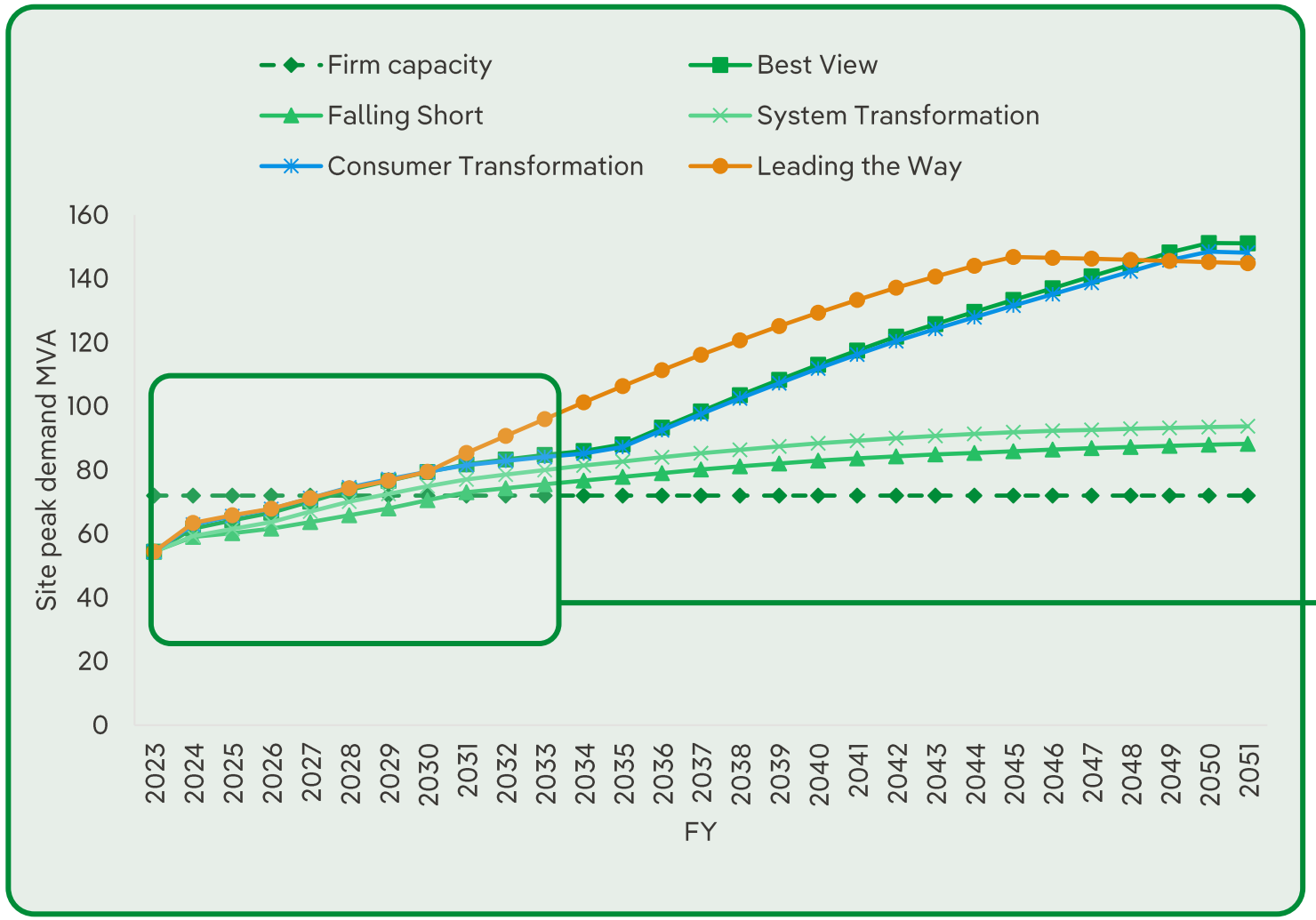
The CEM tool is a standardised approach used across all GB DNOs to evaluate reinforcement versus flexibility service options. However, for cases where flexibility services are not available, the CEM tool cannot provide additional insights to the Ofgem's CBA tools.

The CEM tool was developed using the learning and simplification of a more sophisticated Real Options CBA tool that SP Electricity North West developed in 2015. In 2024 the ROCBA tool was re-platformed in a script-based environment (Python) to remove previous barriers (e.g. number of scenarios, and interventions modelled) and add new functions (e.g. enhanced visualisations and new metrics).

Our ROCBA tool considers real options in terms of asset solutions (or flexibility services) to deal with long-term uncertainties associated with the use of multiple scenarios to inform network investment. The ROCBA tool dynamically allocates asset solutions to minimise both costs and risks across our load-related investment options.

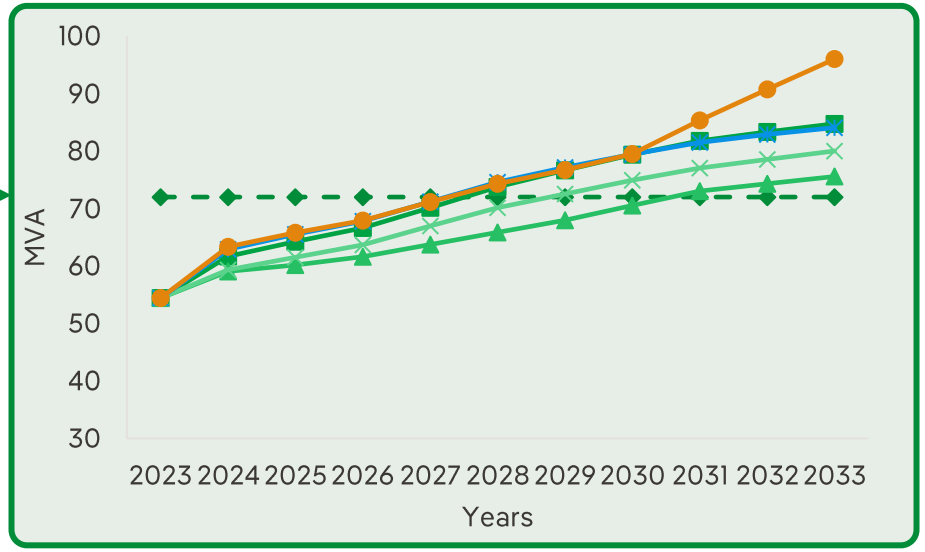
Case study: Wigan BSP

SP ENW's ROCBA – multi-scenario analysis



Different scenarios may trigger the need for intervention at different points in time.

Scenario	When firm capacity is first exceeded	Firm capacity exceedance (MVA)
Best View	FY28	1.8
Falling Short	FY31	1.0
System Transformation	FY29	0.5
Consumer Transformation	FY28	2.6
Leading the Way	FY28	2.3

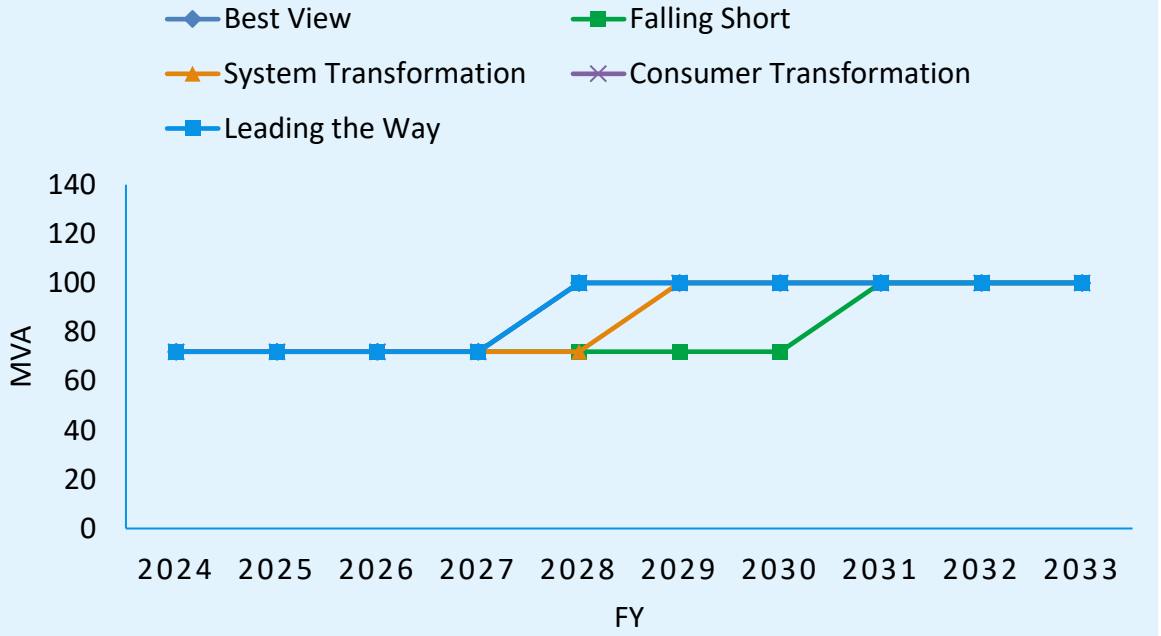


Analysis based on DFES 2023 (published in early 2024).

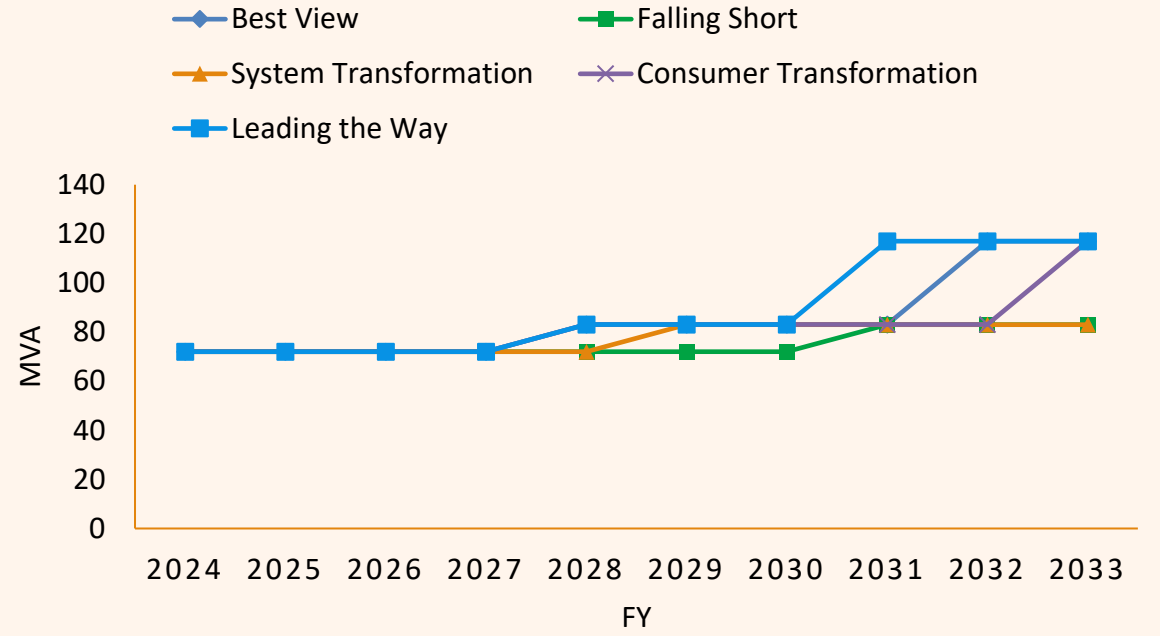
Case study: Wigan BSP

SP ENW's ROCBA – multi-scenario analysis

Firm capacity – Option 4 – SG



Firm capacity – Option 5 – GT + SG

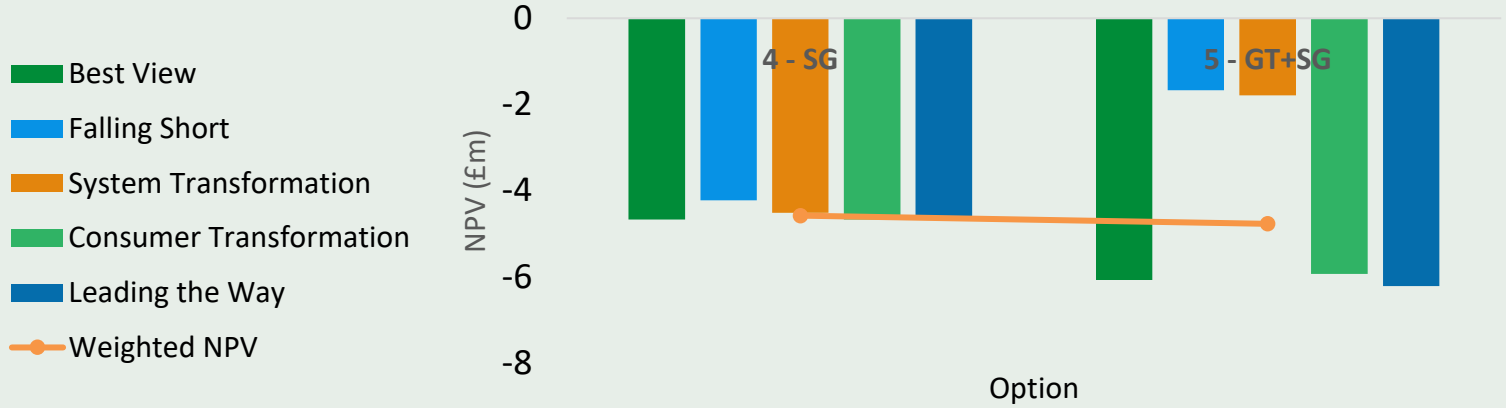


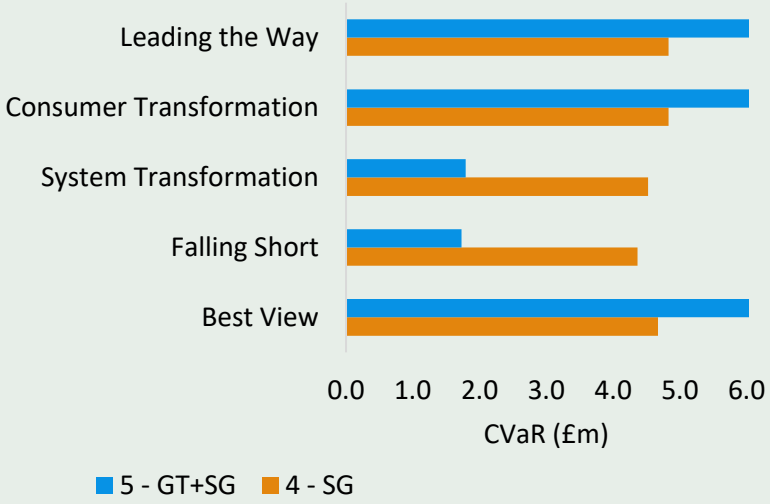
Depending on how peak demand grows, the need for interventions may be postponed or even eliminated. For instance, looking at Option 5, under the 'Falling short' and 'System transformation' scenarios, the replacement of the GT is sufficient to meet demand at least until the end of ED3 and there will be no need to install 5 x bays of 132kV switchgear.

Case study: Wigan BSP

SP Electricity North West

SP ENW's ROCBA – multi-scenario analysis





While option 5 gives the opportunity to defer the second intervention (i.e. SG) after ED3 in the case of slower demand growth, it is also the most expensive option if demand grows at a faster pace, particularly under the Best View scenario which has the highest probability.

The selection of Option 4 as the preferred solution is further supported by the calculated **regret** as well as the **conditional value at risk (CVaR),** which measures the potential additional costs in the event of extreme variabilities associated with peak demand evolution.

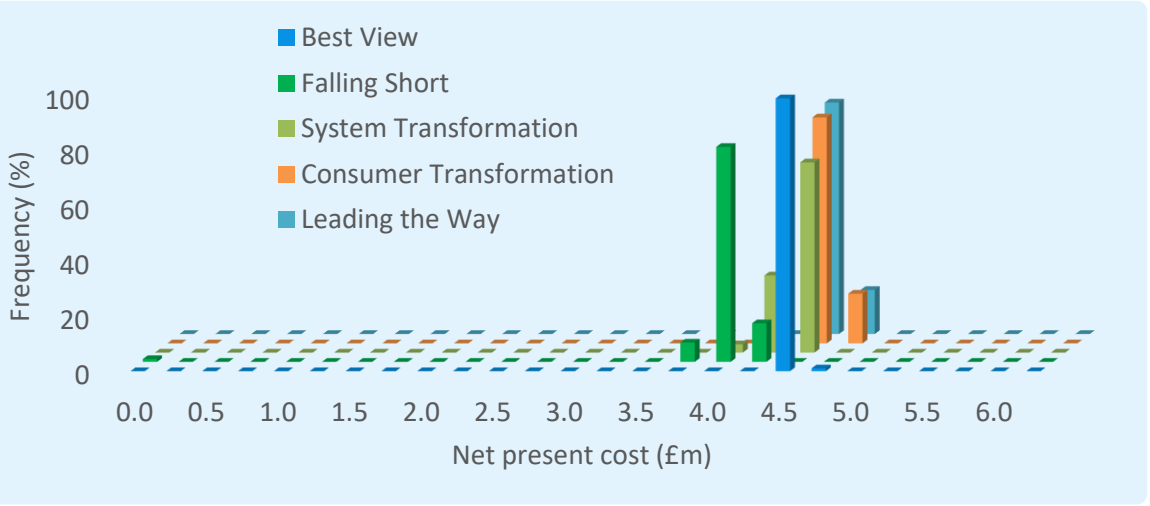
This ability to assess risk is an additional feature of SP ENW's ROCBA tool compared to the widely used Ofgem CBA.

Case study: Wigan BSP

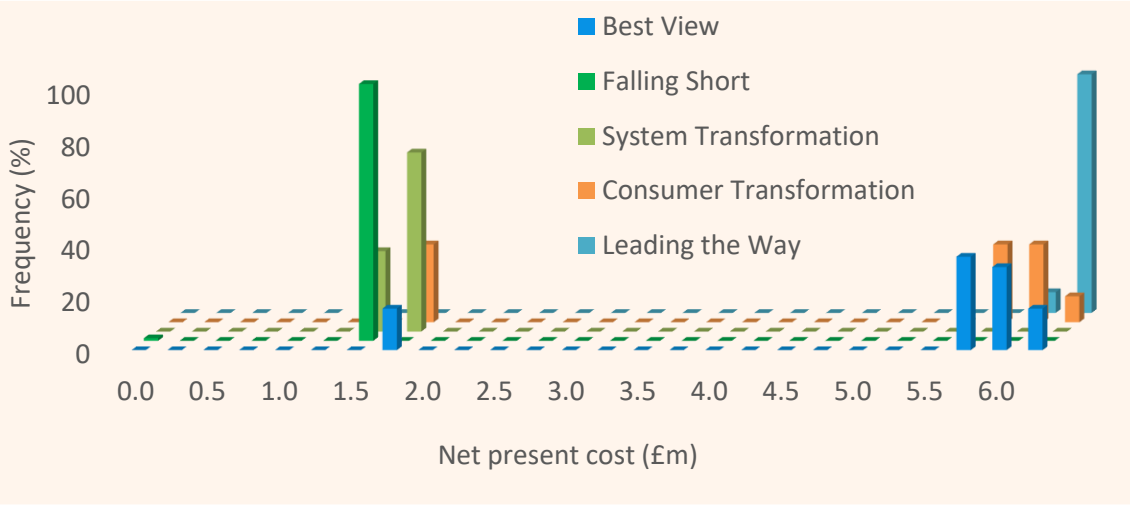
SP ENW's ROCBA – stochastic analysis to model uncertainty

Stochastic analysis around scenarios can provide additional insights into the impact of uncertainty on costs and risks of different intervention options. The ROCBA tool facilitates stochastic analysis, e.g. for weather variations or in line with our Reflect NIA project that focused on EV uncertainties, through the use of micro scenarios to embed probabilistic analysis on top of DFES-type scenarios where all critical uncertainties cannot be captured under the DFES scenario framework.

Net present cost – Option 4 – SG



Net present cost– Option 5 – GT + SG



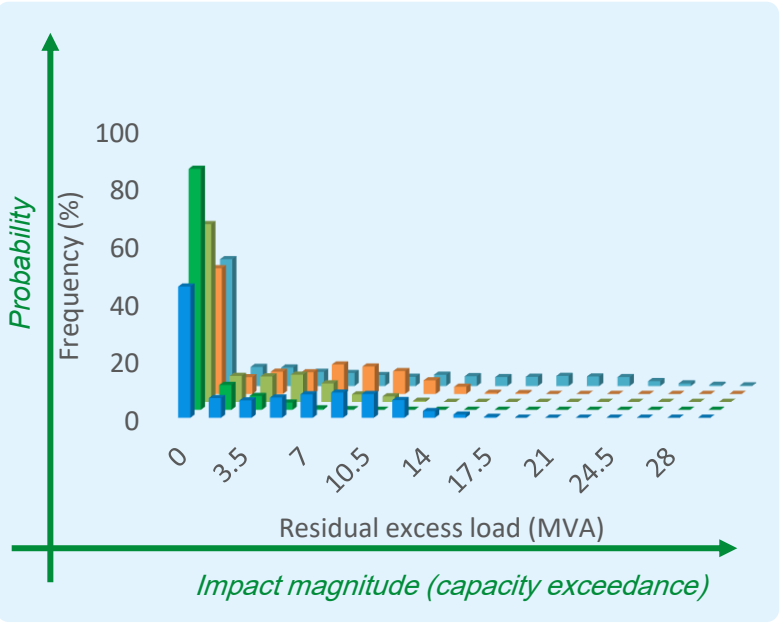
For Wigan BSP, while the expected costs for option 4 is concentrated within a 'tighter' range, Option 5 shows a more pronounced variation across scenarios, further demonstrating the higher risk of incurring higher expenses, should a different future unfold.

How to read the graph: y-axis shows the frequency of occurrence/probability of the net present cost (NPC) being within the value k on the x-axis and the successive value k+1. For example, under the 'Best view' scenario, the probability that the NPC for option 5 is greater than 1.7 £m but under 2 £m is 16%.

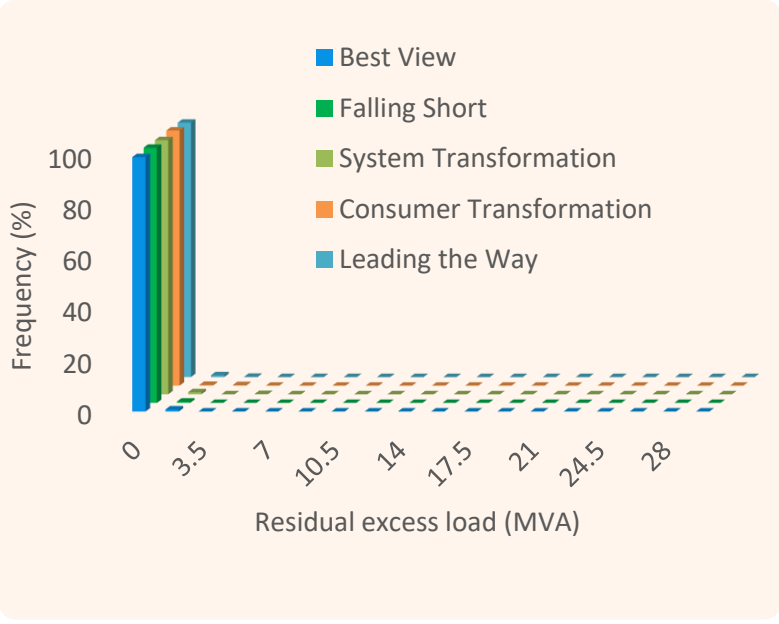
Case study: Wigan BSP

SP ENW's ROCBA – stochastic analysis to model uncertainty

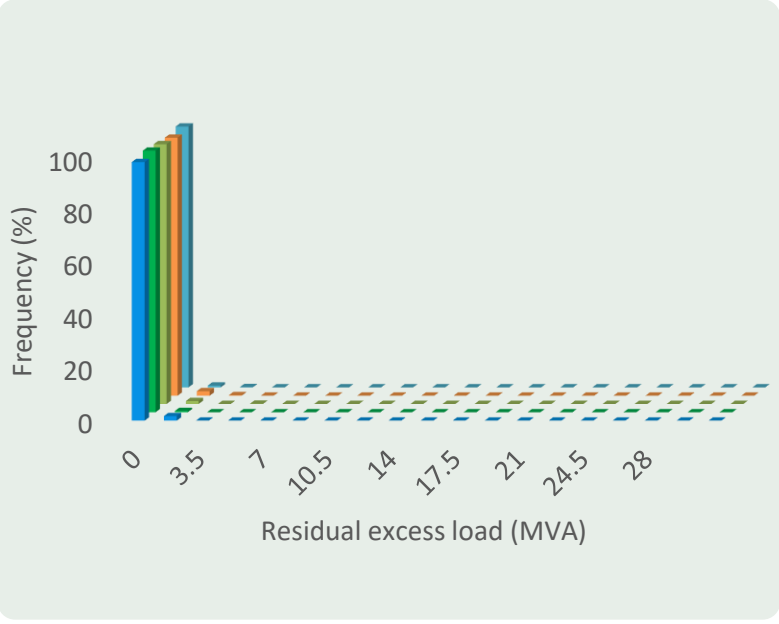
Residual excess load – Option 1
Do nothing



Residual excess load – Option 4
Switchgear



Residual excess load – Option 5
Grid transformer and switchgear



With a focus on demand growth until the end of ED2 (i.e. FY33), it is evident that the risk of not meeting peak demand due to uncertainty factors, such as those weather-related, is similar between Options 4 and 5, which does not justify the additional costs that Option 5 would incur. The selection of Option 4 as the preferred solution is further justified and supported by this analysis.

How to read the graph: y-axis shows the frequency of occurrence/probability of the residual excess load (REL) being within the value k on the x-axis and the successive value k+1. For example, under the 'Best view' scenario, the probability that the REL for Option 1 is greater than 7 MVA but under 8.75 MVA is 8%, whereas this falls to 0% if Option 4 is adopted.

Do you have any questions?

If you have any questions or suggestions about our DNOA report, please contact us. We're always here to help!

DNOA Methodology document
dnoa-methodology-2025.pdf

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