



Our Vision for a Distribution System Operator (DSO)

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Introducing Electricity North West



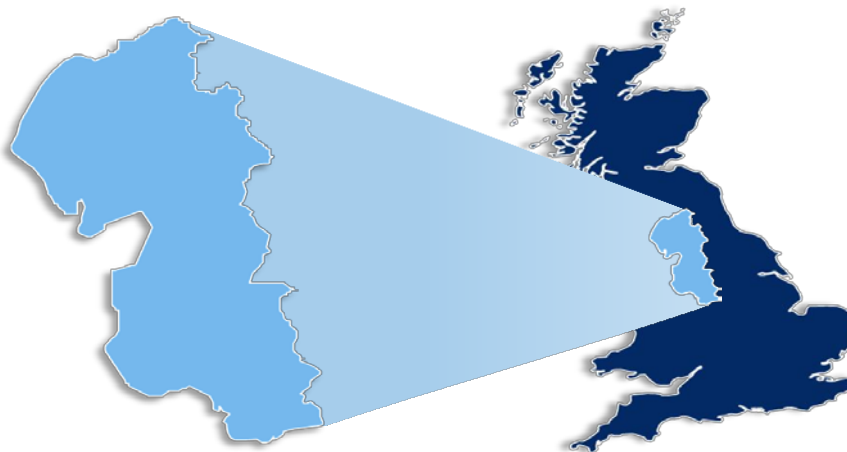
4.9 million



2.4 million



25 terawatt
hours



£12 billion of network assets

56 000 km of network • 96 bulk supply substations
363 primary substations • 33 000 transformers



Penetration of generation ahead of forecast
Will accelerate as innovation lowers price and cost to connect
ENW >1GW/month



Electric cars and heat pumps will increase demand and flexibility
Tesla hot spot 20 x 120kW chargers equivalent to 4 super stores



New relationships & markets forming
Roll out of commercial based capacity solutions such as Active Network Management



Stakeholders challenge DNOs to play larger role in delivering environmental and social benefits



Network Capacity Provision



Network Capacity Market Management



Network Access Management and
Forecasting



Service Definition and Charging



Wider Market Engagement

Ensuring sufficient generation capacity – remains responsibility of National Grid

Our responsibility: **To enable customers connected to our networks the freedom to buy and sell their energy safely, securely and at lowest cost**

Requires new service model for network management and design
Provision of flexible network capacity through local and regional balancing

DSO will need to determine:

Point of
Connection
and operating
terms

Any new
capacity
required

Quality of
supply

Security and
Resilience
standards

Electrical
losses
optimisation

Maximising utilisation of all existing network capacity ensures efficiency

Provision of capacity **for** customers **from** other customers is often lowest cost, first option

DSOs must facilitate local markets for flexible capacity

- Direct customer access
- Access through aggregators

Exchange of information and enhanced transparency necessary to avoid inefficient network over-stress and maintain security of supply

Dynamic network management becomes a 24/7 function to balance security, cost and access

Commercial
solutions

Managing
essential
outage
plans

Engineering
solutions

New service metrics and mechanisms
required

Generation
Indices

Constraint
Indices

Enhanced forecasting abilities
required

Day ahead
...24

Year ahead
...365

Long-term
forecasting
--2030--

Structure of network charging will require fundamental review
Charging arrangements must reflect service customers require

Capacity based charging structure

Potentially enhanced by recognition of requirements for services such as:

Security of
connection

Power
quality

Voltage
stability

Fault
Level

Reactive
power and
inertia

DSOs well placed to provide additional, value-adding but non-essential, services to network users, such as

Generation output
optimisation

RESPOND

Power factor
correction

DSOs can support the Transmission System Operator in whole system balancing through commercial provision of services

ENWL commercial roll-out of CLASS technology this year is first example of this

CLASS
Customer Load Active System Services

Network requirements of domestic customers are significant design feature

Harnessing flexibility of domestic customers achieved in multiple ways

Through aggregators, including existing energy suppliers



Through unseen demand-side response utilising techniques such as CLASS



Through direct engagement by the DSO, such as ENWL Power Saver Challenge





Pilot project to address network challenges



Advice and rewards to help customers reduce energy use



Reduced peak demand and customers bills

POWER
SAVER
challenge

Partner collaboration and community action to reduce demand, save money for customers and deliver social benefits