

**electricity
north west**

Bringing energy to your door



Keeping the lights on in a green world

Paul Turner

27 September 2017

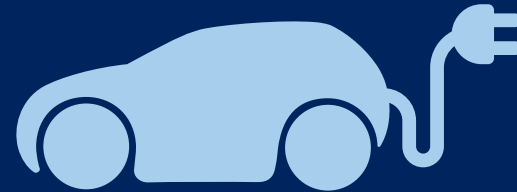
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**electricity
north west**



Introducing
Electricity North West

Low carbon future



Innovation & the energy
challenge

Summary and questions



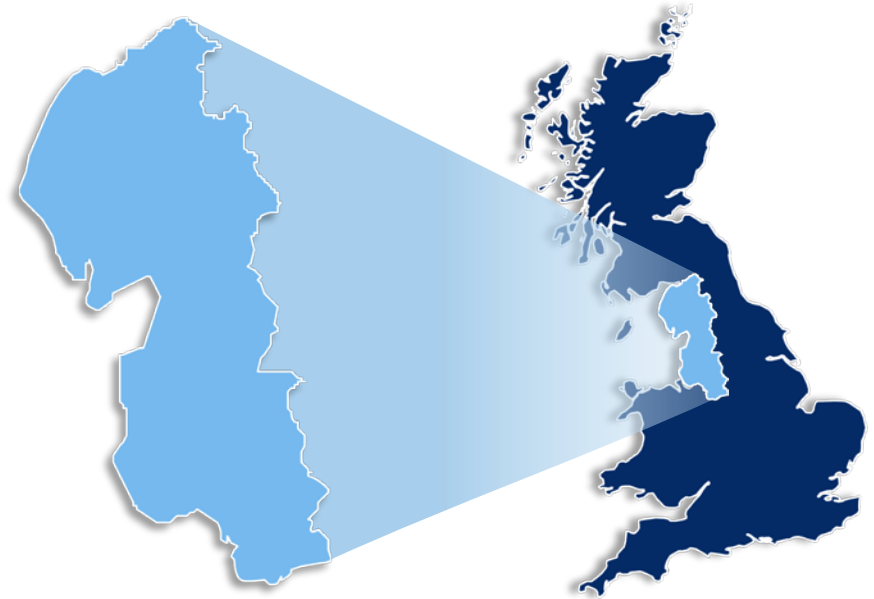
4.9 million



2.4 million



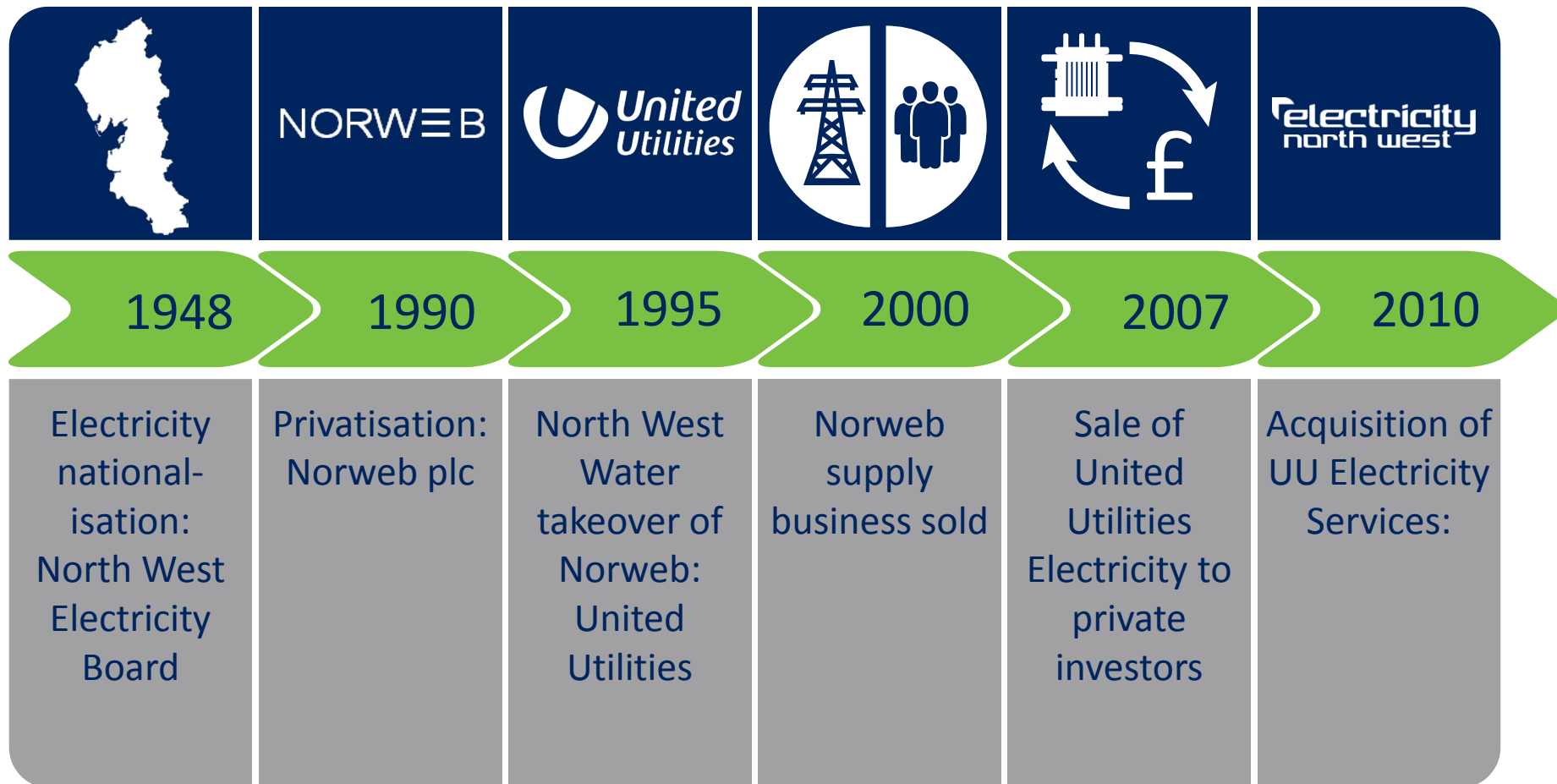
25 terawatt
hours

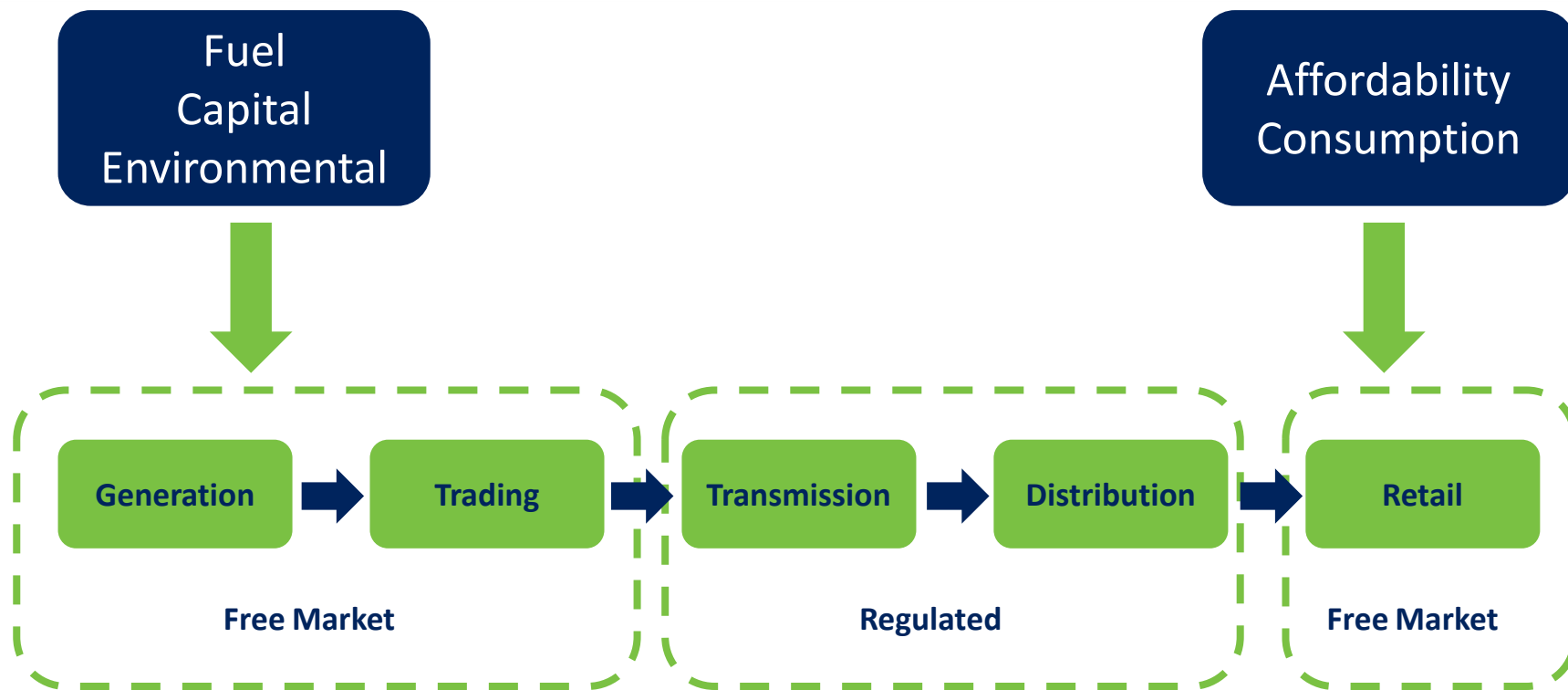


£12 billion of network assets

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

A track record of delivery





DNO gets approx 19% of total bill

Network businesses are the only price throttle available



2015

1/3 gas
1/3 electricity
1/3 oil



2020

15% of energy
from renewables
35% reduction in
CO₂
Generation mix is
radically
'overhauled'



2030

60% CO₂ reduction
Electricity demand
increases, driven by
electric cars & heat
pumps
Network capacity
significantly
increases



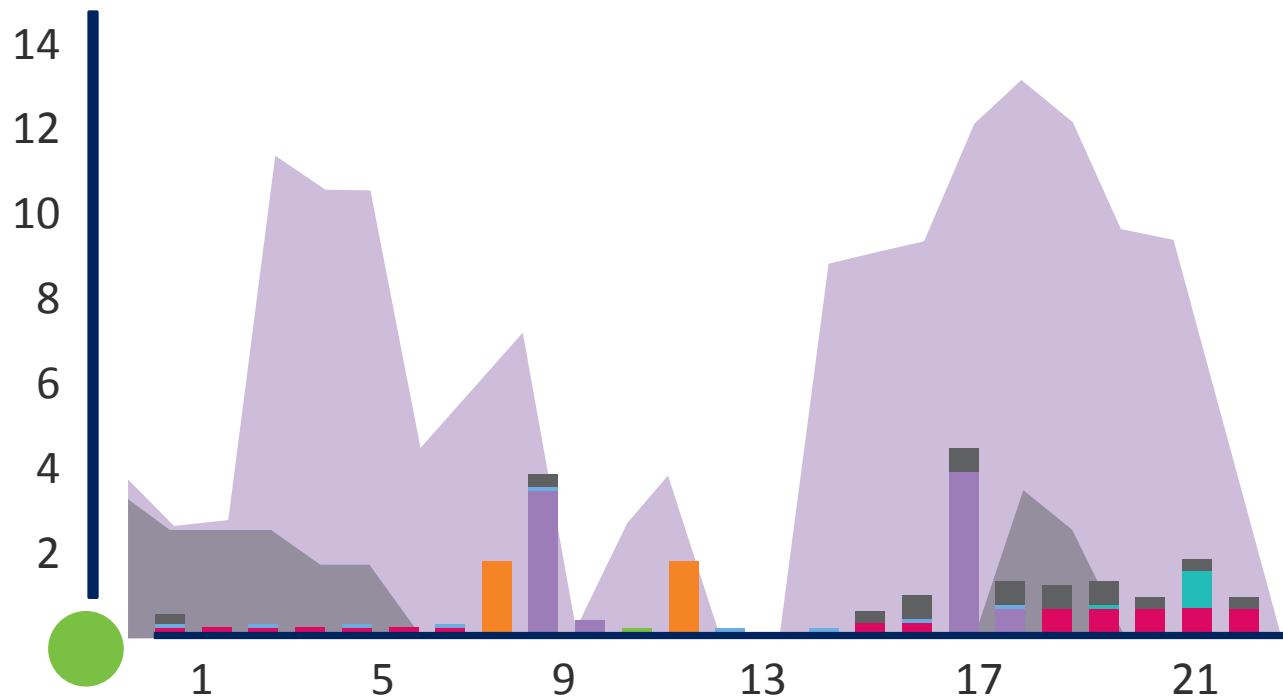
2050

80% CO₂ reduction
Significant
increase in
electricity demand

- Uncertainty in future demand and generation
- Difficult to predict demand
- More pressure to meet customers' needs at minimum cost
- Historic network cost optimised, expensive and slow to change

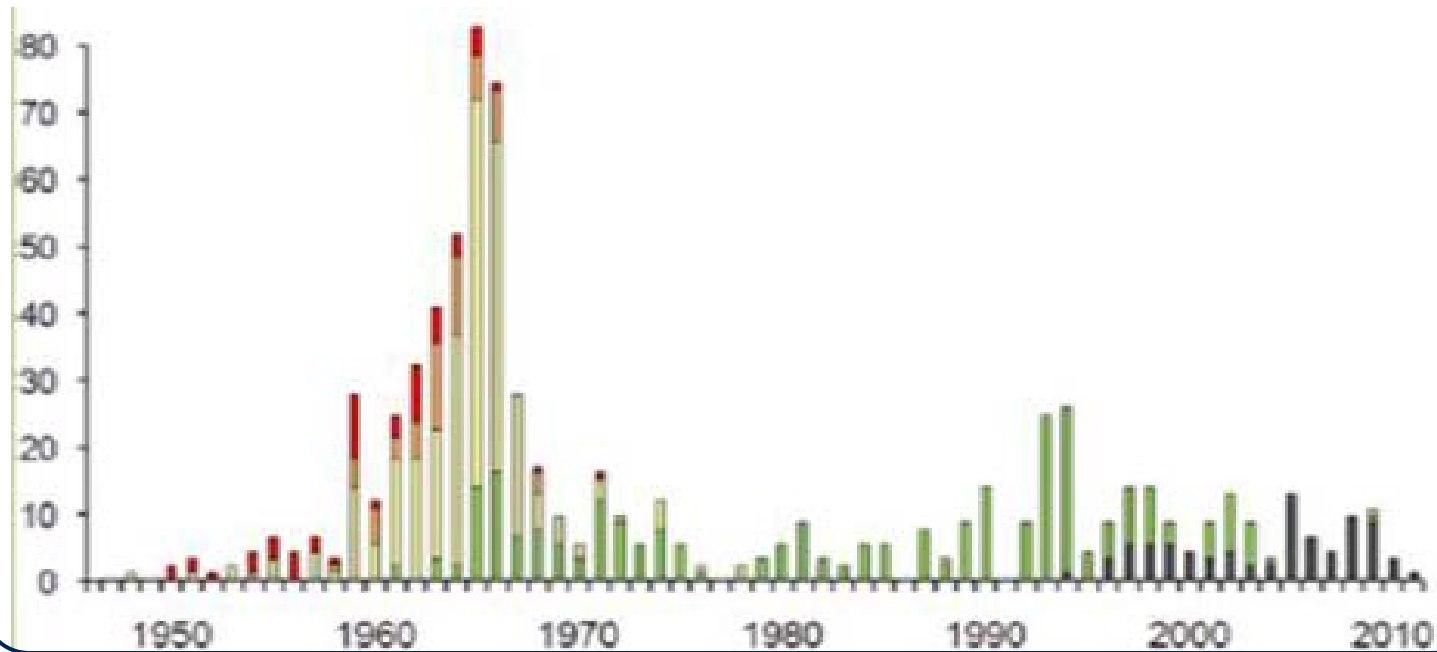


Domestic demand profile 2012/2035





Age profile of assets



How are we doing in GB?



Research and
technology
demonstration



LCN Fund (now
NIC and NIA), TSB,
ETI and other
sources has
ensured GB is well
placed



ENA central to
co-ordinating
developments
through smarter
networks portal



DECC/ Ofgem
Smart Grid Forum

Foundations are in place to deliver the benefits

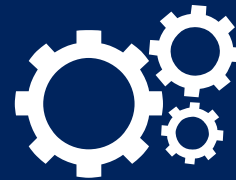


Four consecutive
successful second tier
LCN Fund bids



Only DNO to spend all
of our innovation
allowance

Leading our industry to
a low carbon future



Stimulating supply
chain development

Collaborative partnerships with SMEs, universities
and National Grid



Leading work on developing smart solutions



Deliver value from existing assets



Customer choice



Five flagship products (second tier/NIC)

£42 million

C2C

SMART STREET

Celsius

CLASS

RESPOND



Seven smaller scale projects – £6 million invested



Low voltage network solutions

Voltage management on low voltage busbars

The 'Bidoyng' smart fuse

Low voltage integrated automation

Low voltage protection and communications

Fault current active management

Combined online transformer monitoring



Leading or supporting £7.5 million of NIA projects



Asset risk optimisation

Combined on-line transformer monitoring

Demand scenarios

Distribution asset thermal modelling

Sentinel

Review of Engineering Recommendation P2/6

Reactive power exchange application capability transfer

Smart Grid Forum work stream 7

Overhead line ratings



Bidoyng smart fuse - single-shot auto-recloser



KELVATEK



WEEZAP - world leading LV vacuum circuit breaker



Combines proven technology and new commercial contracts to release network capacity



Seeks to demonstrate that electricity demand can be managed by controlling voltage...without any discernible impacts on customers

SMART STREET

Combines innovative technology with existing assets to make networks and appliances perform more efficiently



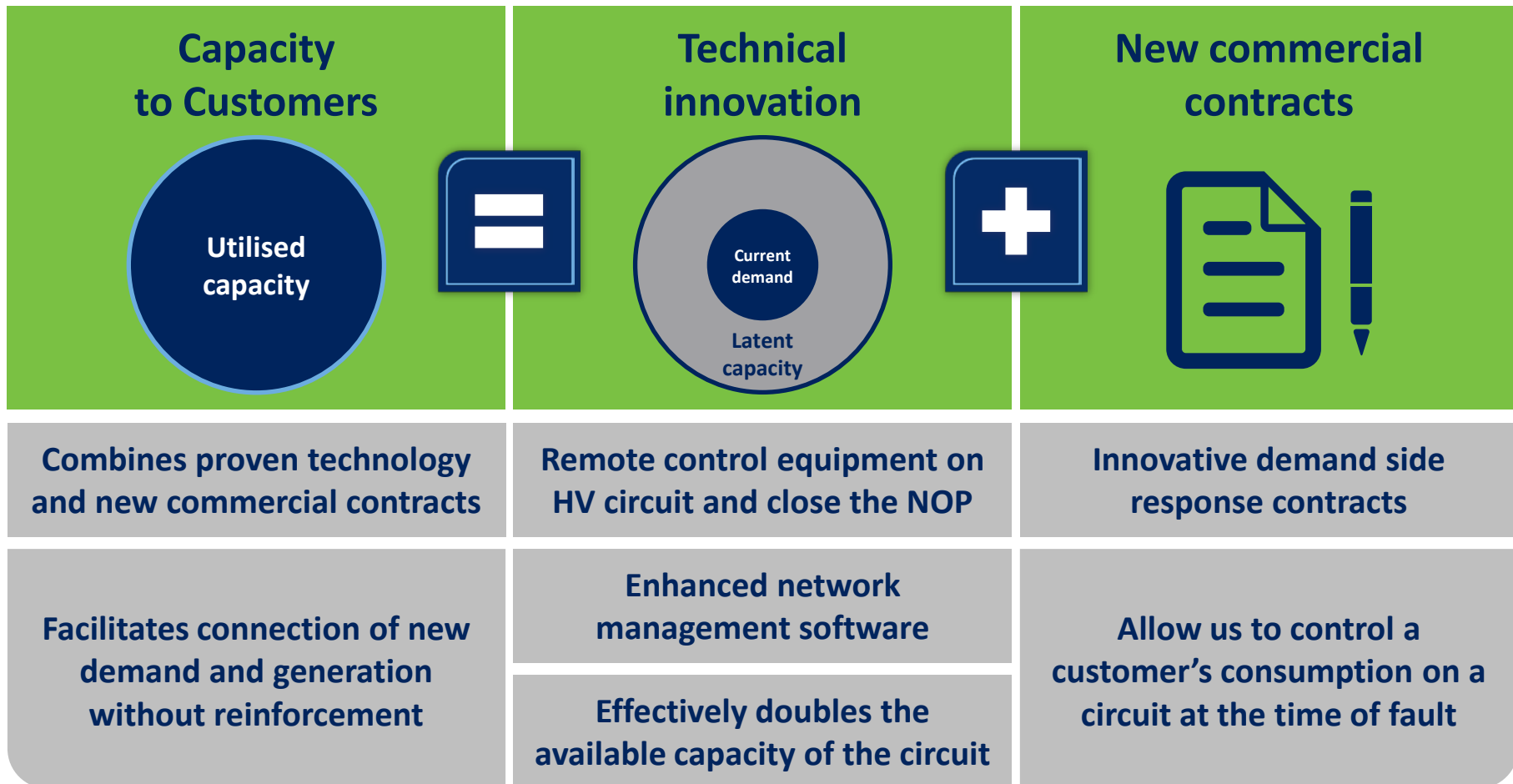
The first UK demonstration of an active fault level management solution that avoids traditional network reinforcement



A co-ordinated approach to managing the temperature of electrical assets in distribution substations to release additional capacity

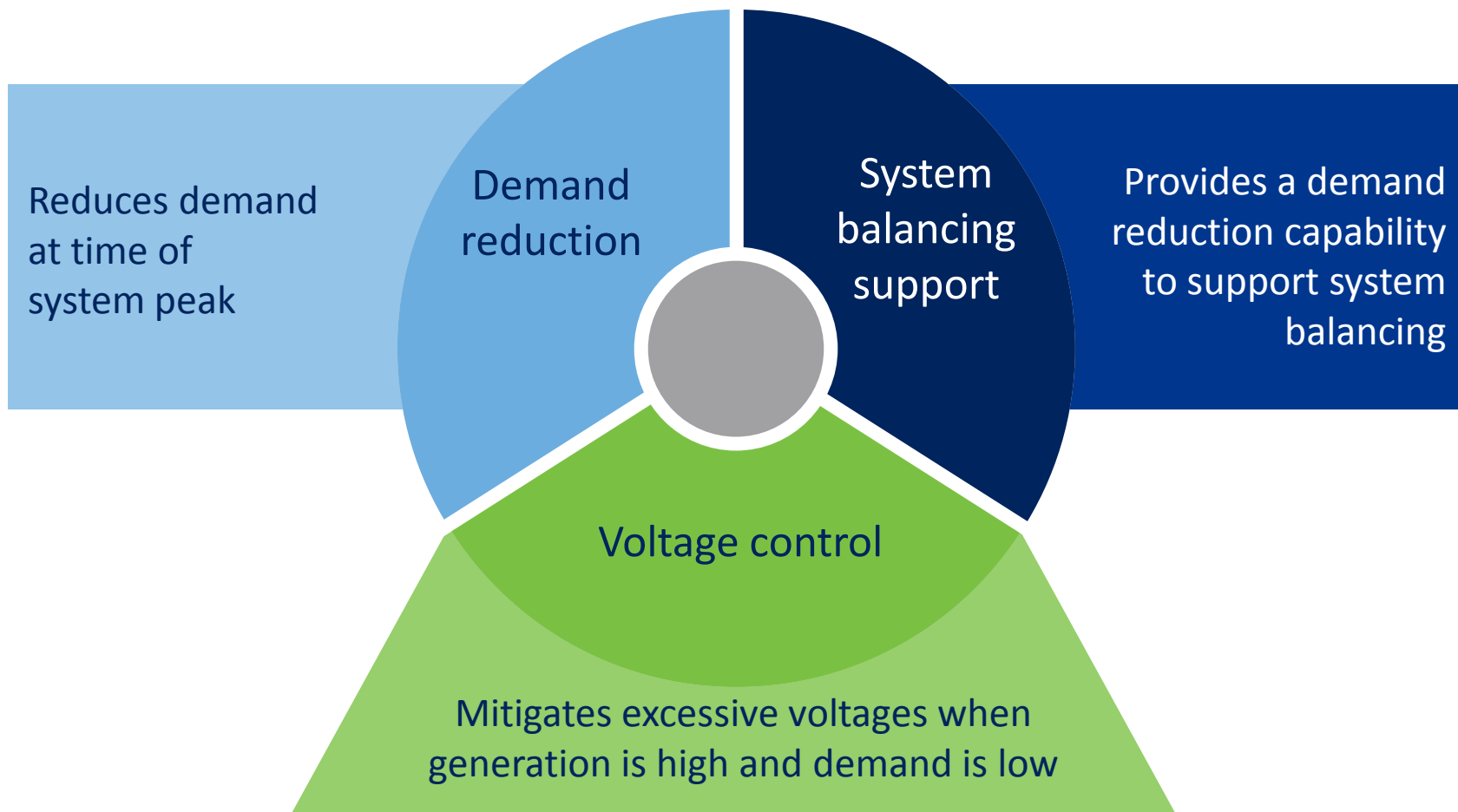


Capacity to Customers unlocks latent capacity on the electricity network





CLASS is seeking to demonstrate that electricity demand can be managed by controlling voltage...without any discernible impacts on customers

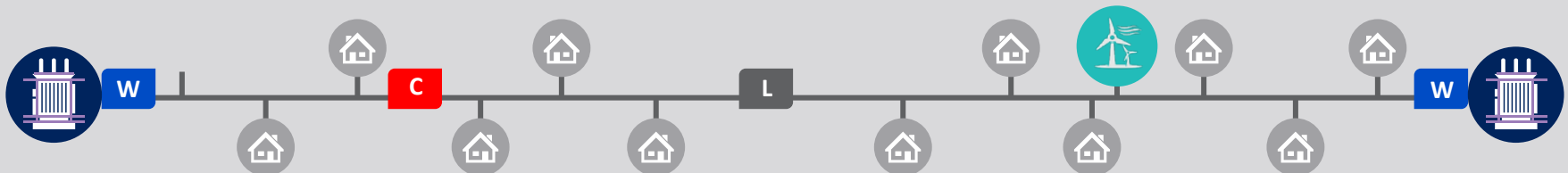




New controllable switching devices stabilise voltage

Allows us to lower voltage levels

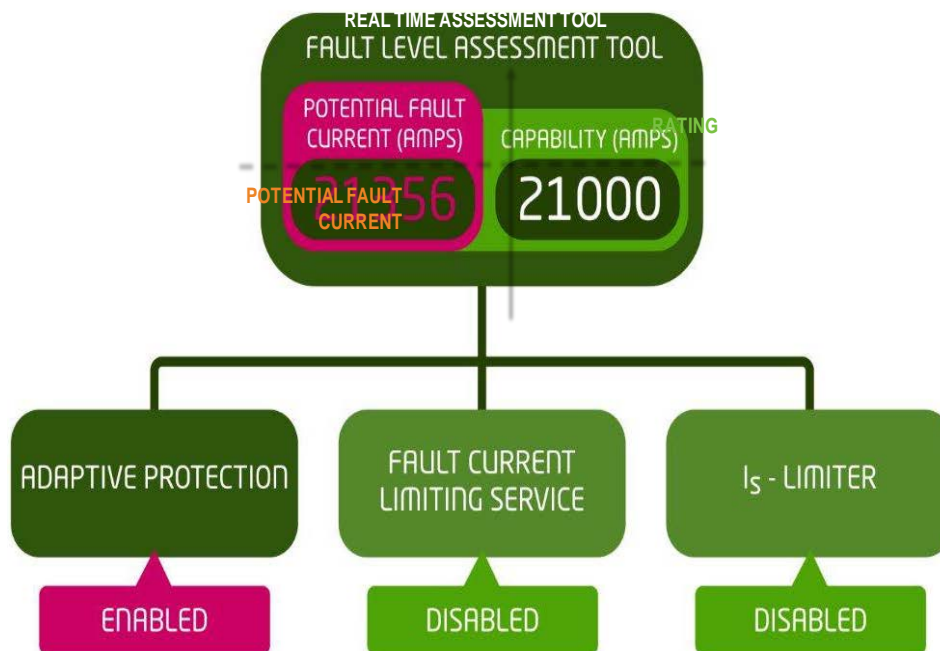
Enables networks and appliances to work in harmony



- Low cost
- Quick fit
- Minimal disruption
- Low carbon
- Low loss
- Invisible to customers
- Faster connection of low carbon technologies



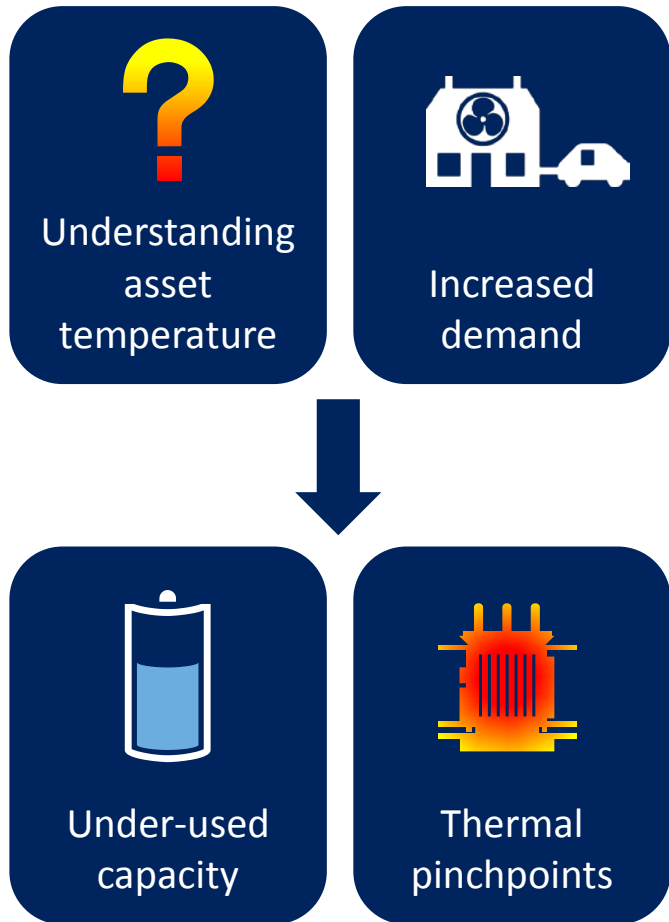
Respond is the first UK demonstration of an active fault level management solution that avoids traditional network reinforcement



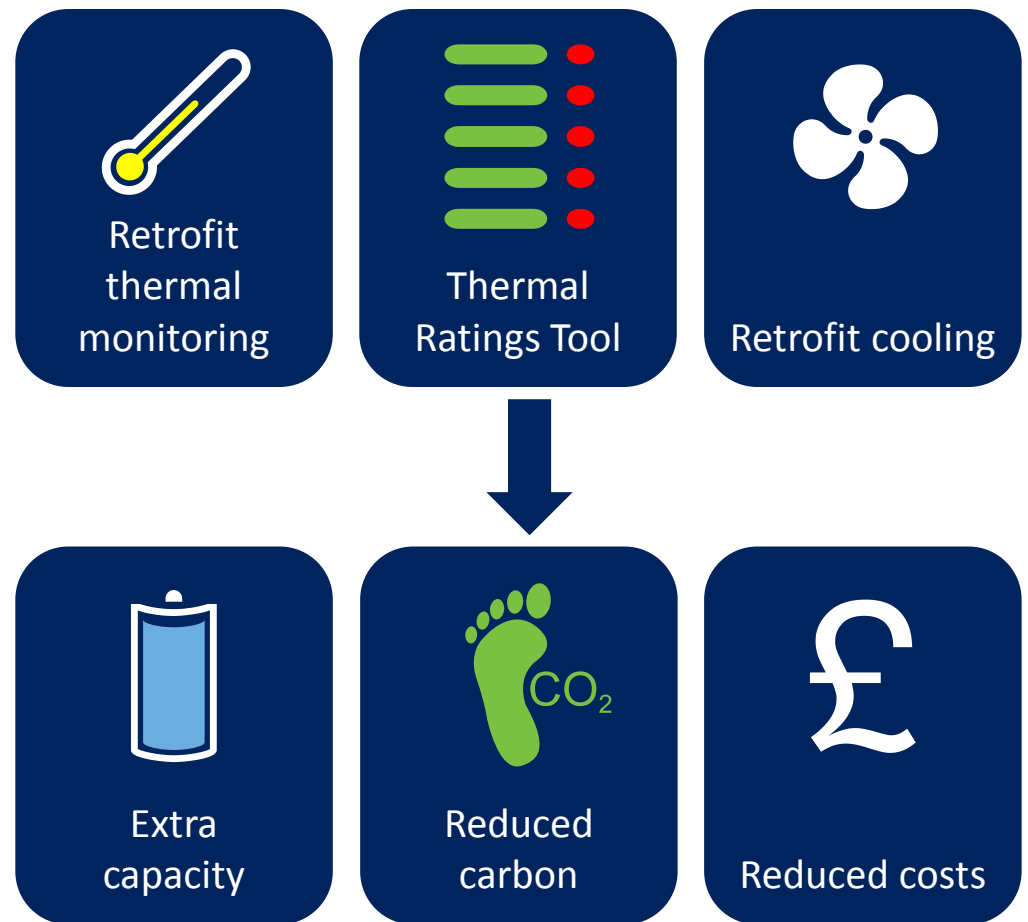
World first in commercial fault level management services



Problem



Celsius Solution





**Low carbon future
will bring new
challenges**



**The
challenge**

**Industry is
preparing by
providing funding
for trials**



**Getting
ready**

**Engaging with
customers is a key
part of our trial
work**



Customers

**The future will give
us an opportunity to
change the way we
work and provide
flexible solutions**



Change

Want to know more?



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www.enwl.co.uk/thefuture



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Thank you for your time and attention