



The Electricity Trilemma: Usage, Expectations and Assets

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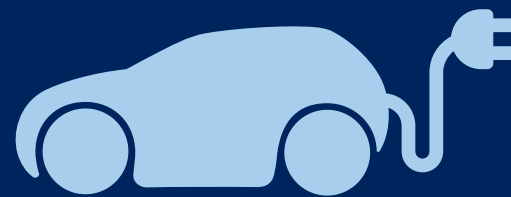
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electricity
north west



Introducing
Electricity North West

Low carbon future



Innovation & the energy
challenge

Summary and questions



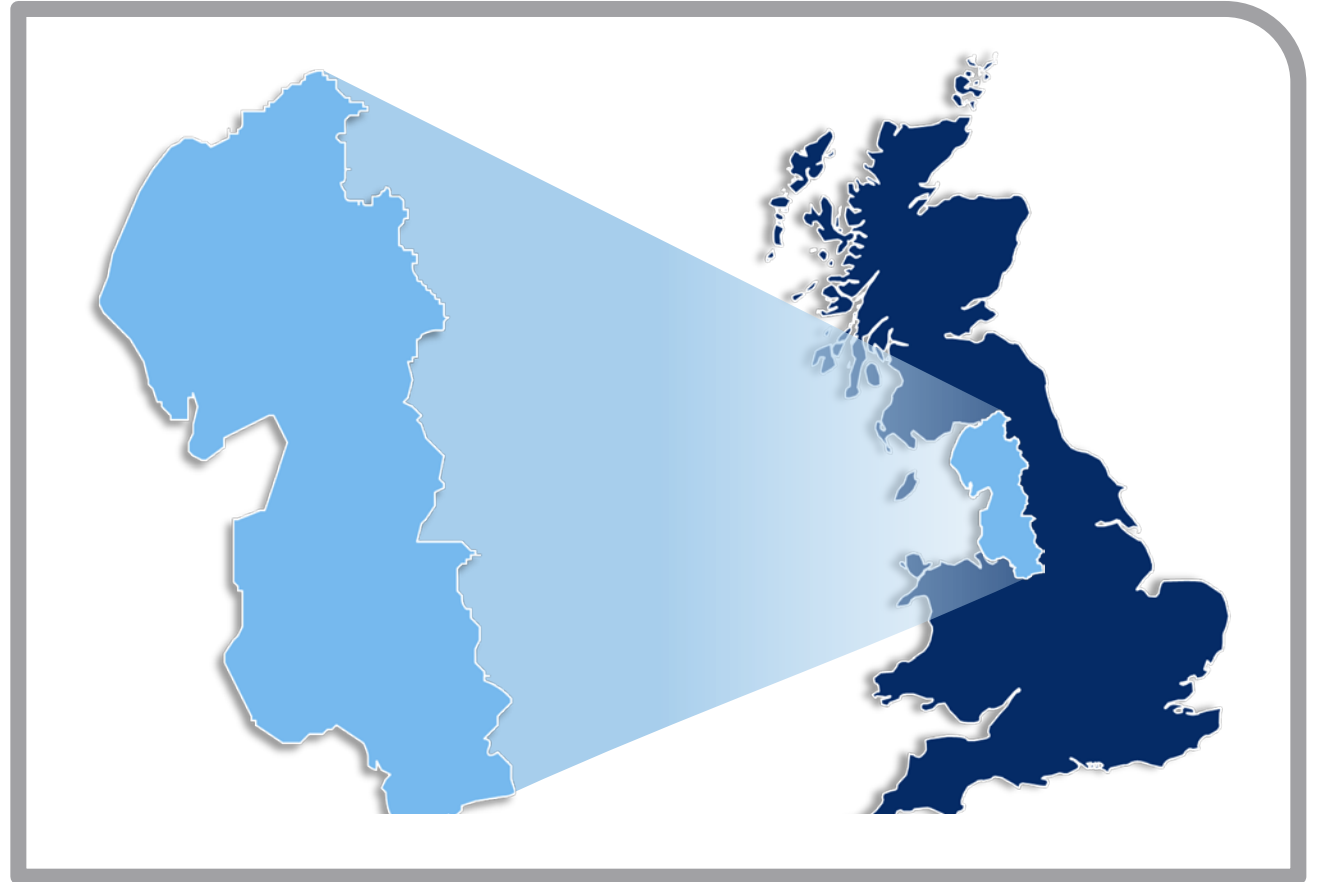
5 million



2.4 million



25 terawatt hours



£12 billion of network assets ● 56 000 km of network
96 bulk supply substations ● 363 primary substations ● 34 000 transformers

A track record of delivery



1948

1990

1995

2000

2007

2010

Electricity nationalisation: North West Electricity Board

Privatisation: Norweb plc

North West Water takeover of Norweb: United Utilities

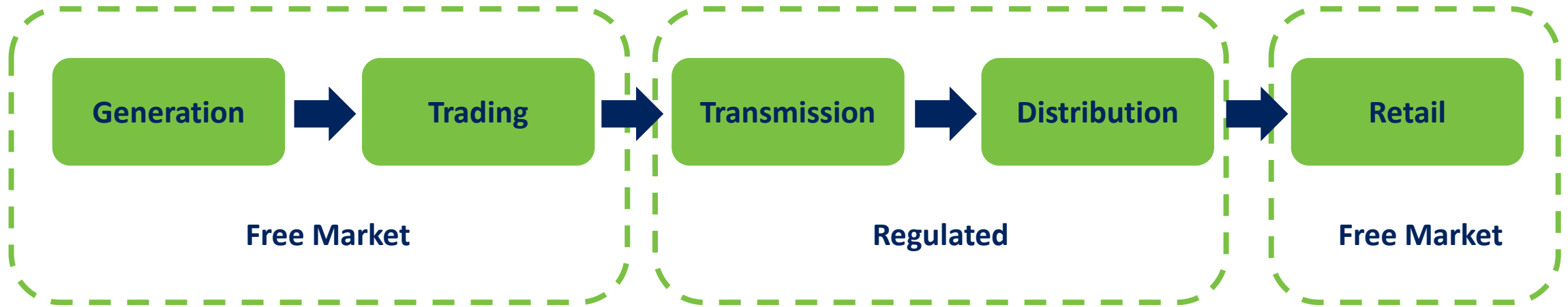
Norweb supply business sold

Sale of United Utilities Electricity to private investors


Acquisition of UU Electricity Services




All large generators, suppliers and networks are regulated




But network businesses are the only ones with price regulation




2015
1/3 gas
1/3 electricity
1/3 oil
~40% of electricity is low carbon



2020
35% reduction in CO₂
15% of energy from renewables
Generation mix is radically 'overhauled'



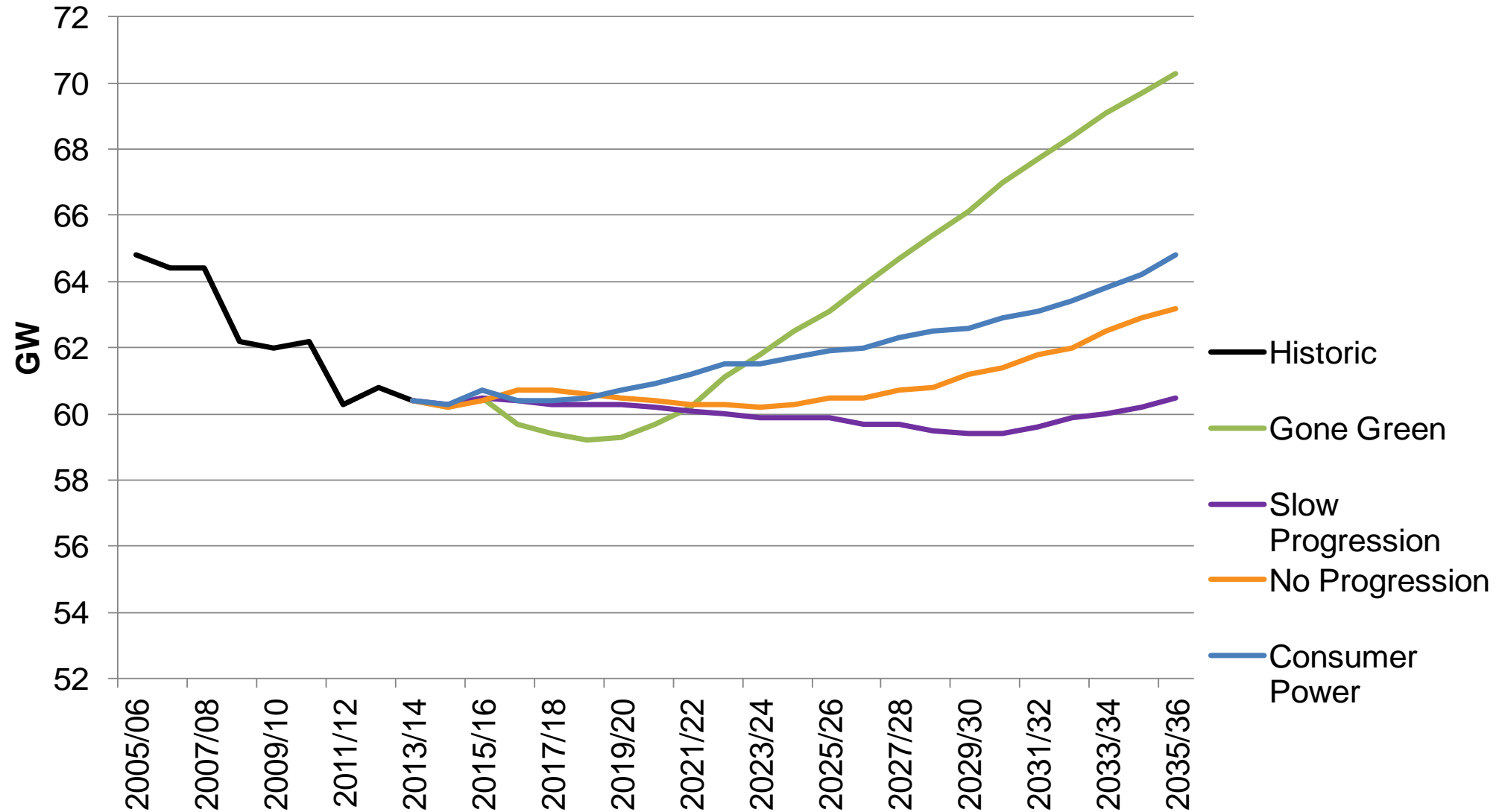
2030
60% reduction in CO₂
Electricity demand increases, driven by electric cars & heat pumps
Distribution network capacity significantly increases



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
-

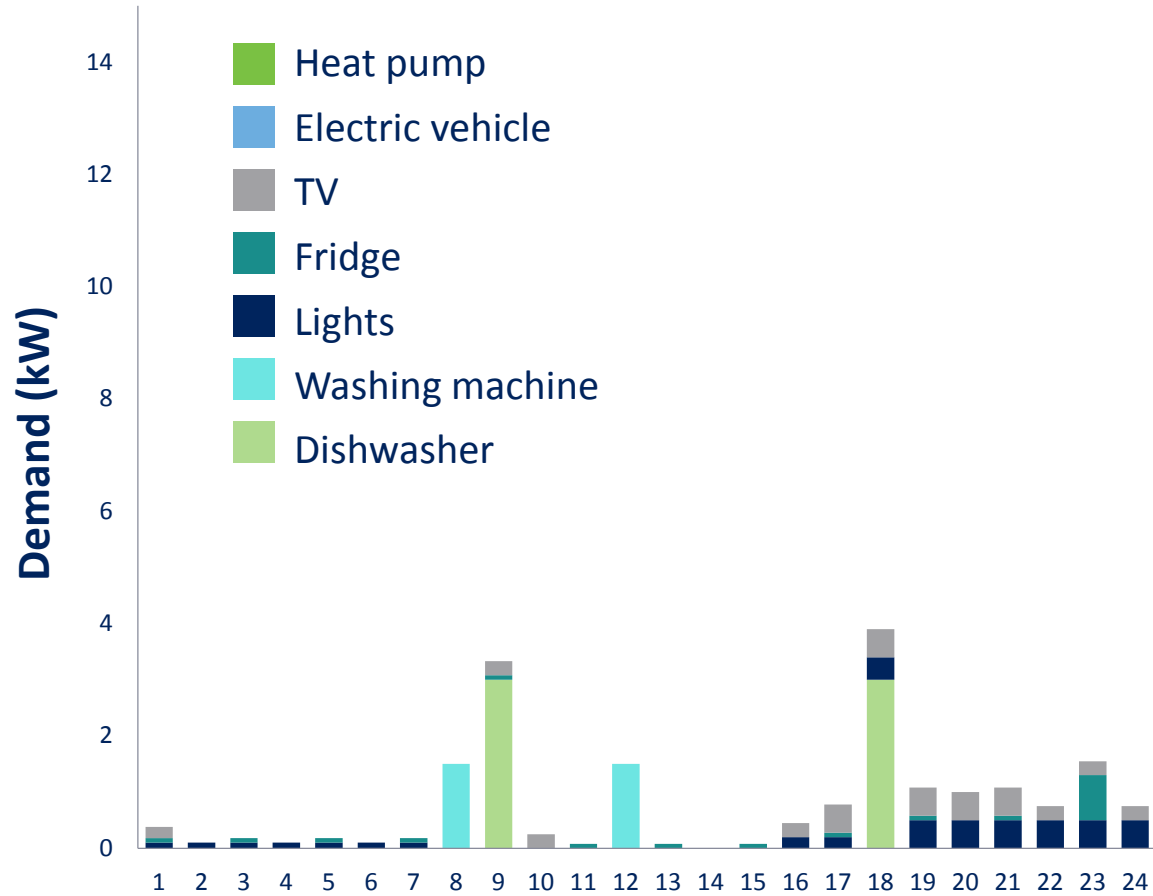
National Grid's future energy scenarios 2015



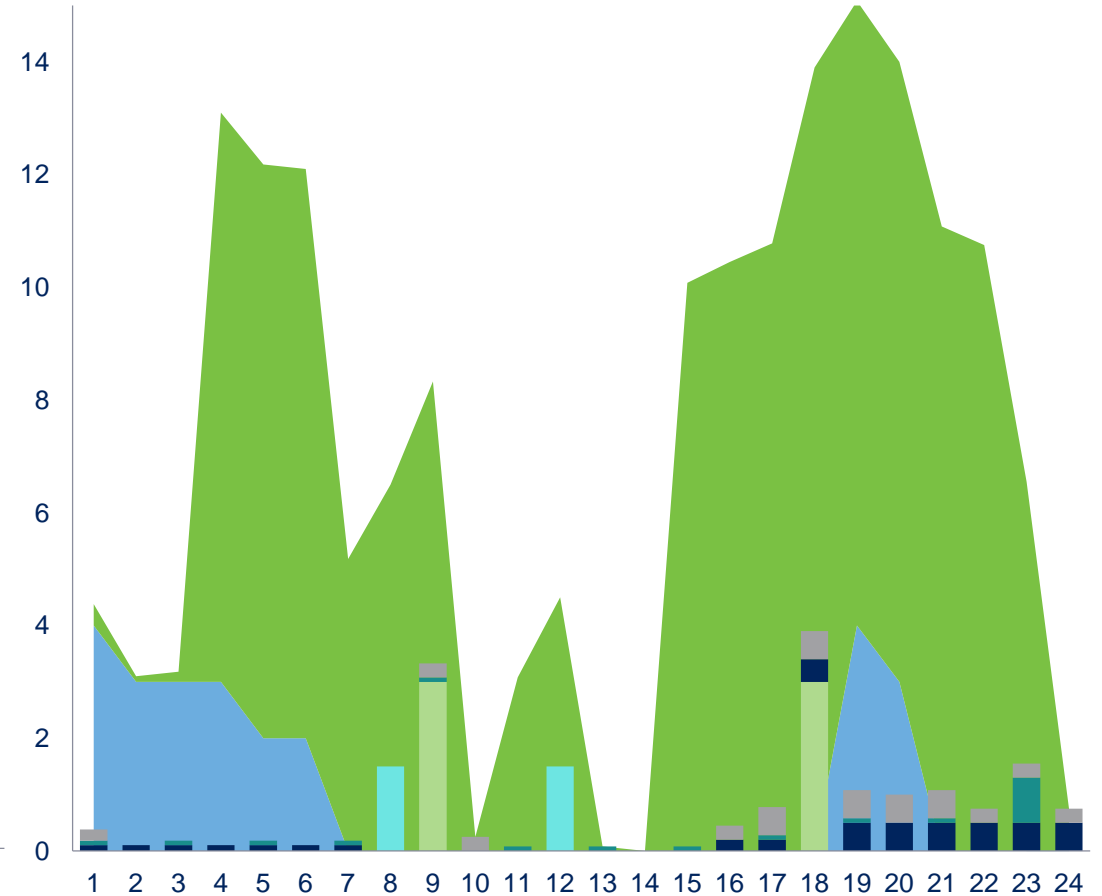
Our challenges



2012

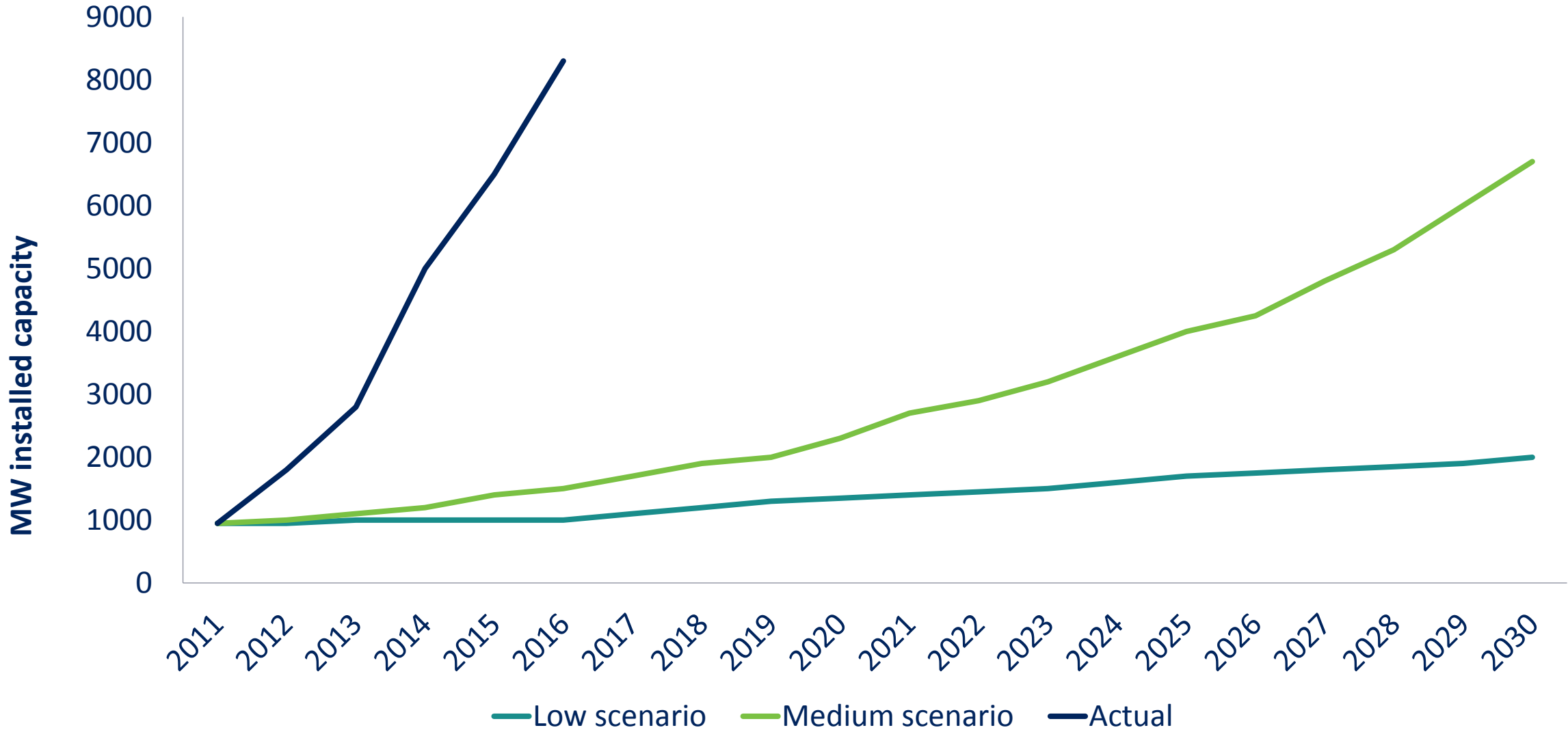


2025



Time of day

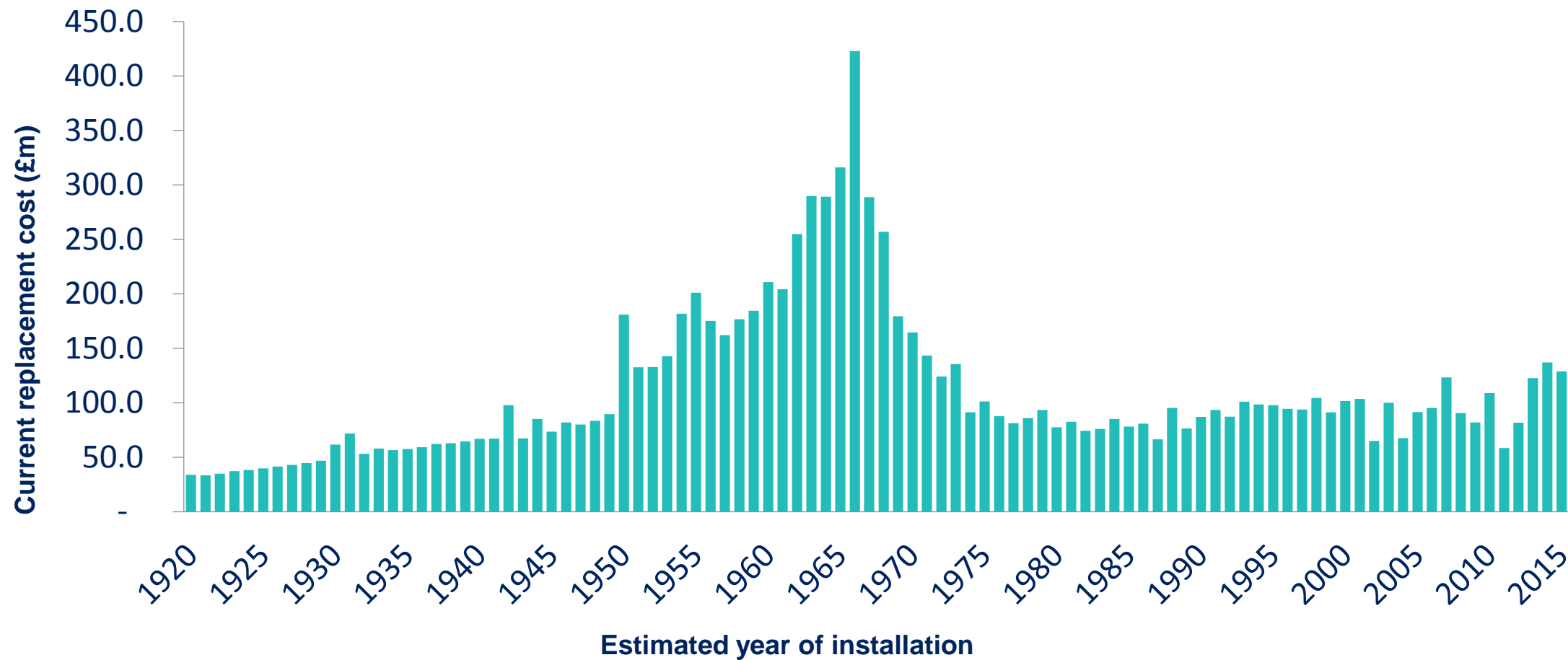
PV uptake

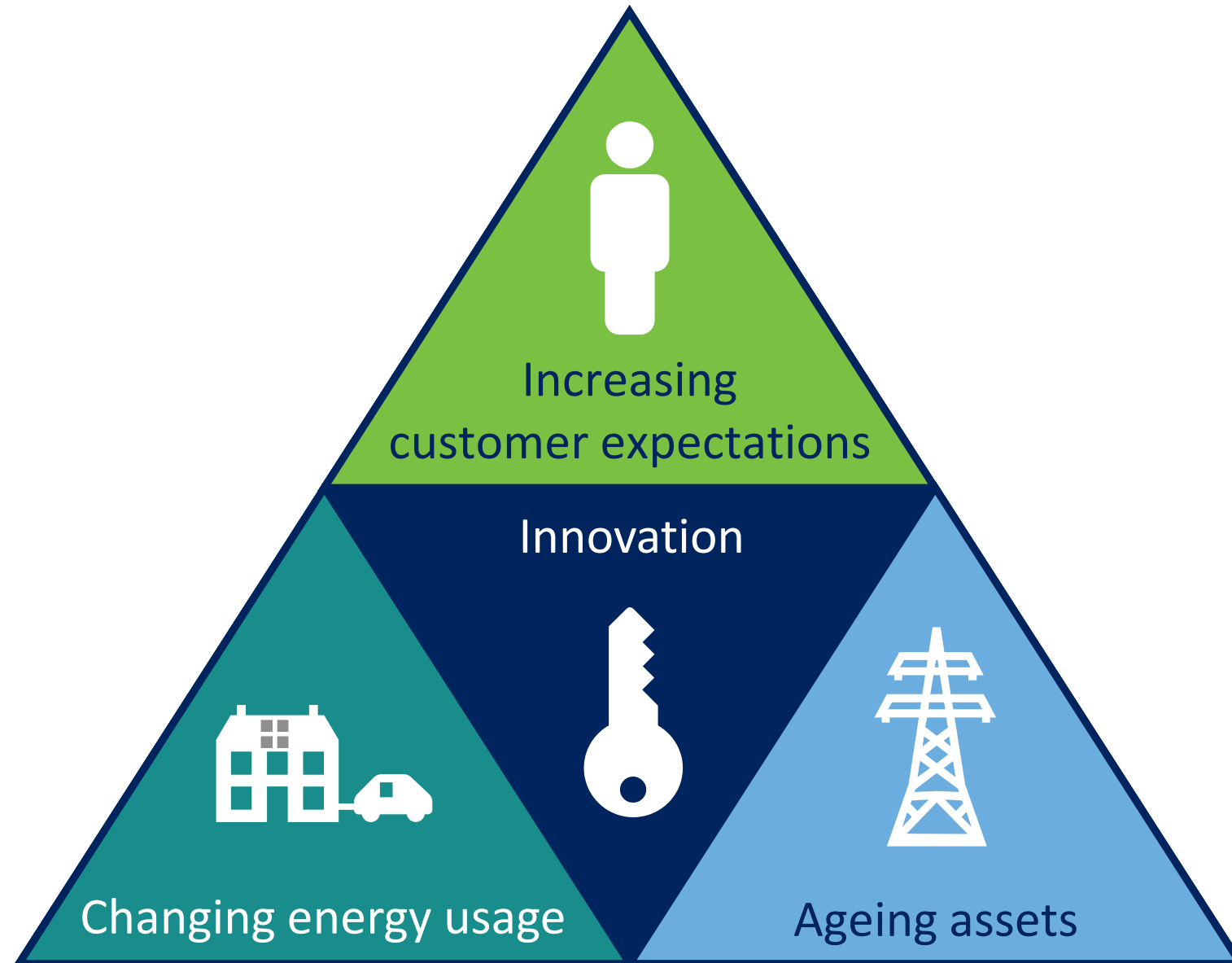


Source: EA Technology 2012, DECC



Age profile of assets







Research and
technology
demonstration



LCN Fund, 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

Innovation funding



Before RIIO-ED1			RIIO-ED1	
Innovation Funding Incentive	Low Carbon Networks Fund Tier 1	Low Carbon Networks Fund Tier 2	Network Innovation Allowance	Network Innovation Competition
0.5% of price control turnover (£2m/pa)	0.5% of price control turnover Small scale demonstration	Central fund for big projects	Replace IFI & LCN Fund T1 0.7% turnover (£3m/pa)	Central fund for big projects





Five consecutive successful
second tier / NIC bids



Only DNO to spend all of our
innovation allowance

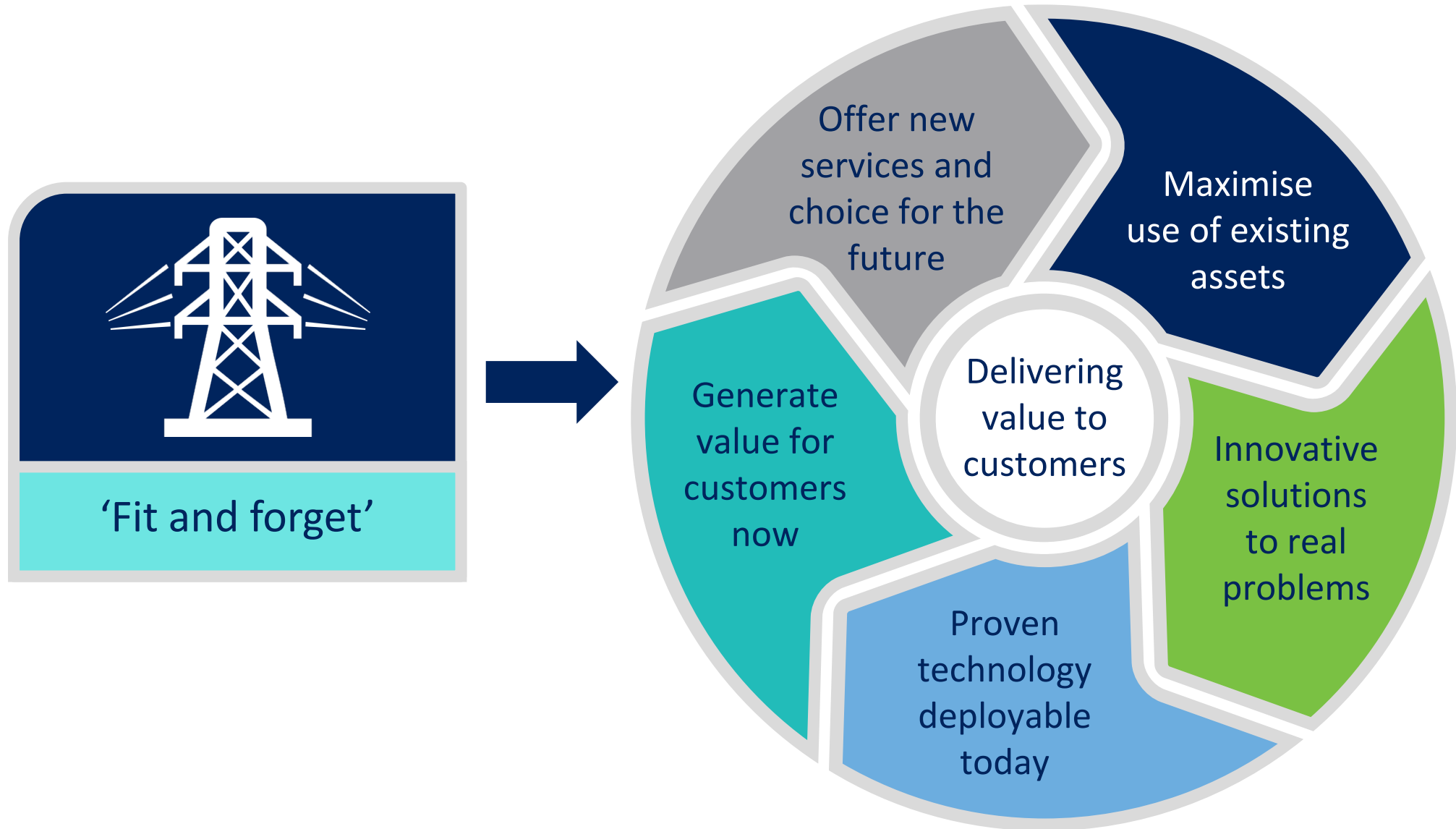
Leading our industry to a low
carbon future



Stimulating supply chain
development

Collaborative partnerships with SMEs, universities
and National Grid

Our innovation strategy



electricity
north west

Bringing energy to your door

QUESTIONS & ANSWERS

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Thank you for your time and attention