

HAUC Conference

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nationalgrid



Who we are

National Grid – the new name for Western Power Distribution

- We are part of the largest electricity transmission and distribution business in the UK
- We distribute power to **8 million homes & businesses**, covering the East and West Midlands, South Wales and South West England
- Our vision is to enable net zero, while continuing to safely operate a reliable network, whilst ensuring that this is affordable for our customers
- We will do this by delivering excellent customer service, by keeping the lights on and ensuring customers can have a connection when they want it.



What we do

We are responsible for performing five core tasks. These are to:



Keep the power flowing

by operating and protecting our assets



Maintain equipment

so that the network remains reliable



Connect customers

by utilising existing capacity or upgrading our network



Fix the network

if the equipment gets damaged or is faulty



Operate a smart system

by managing two way power flows and flexibility services

RIIO-ED2 Final Determination



National Grid



We have £5.9 billion to delivery the services for our stakeholders - that is the largest amount of any DNO in GB.



For RIIO-ED2 we can invest around £1.2 billion per year which is higher than in RIIO-ED1 at £1.05 billion per year.



Annual investment has increased by 14%

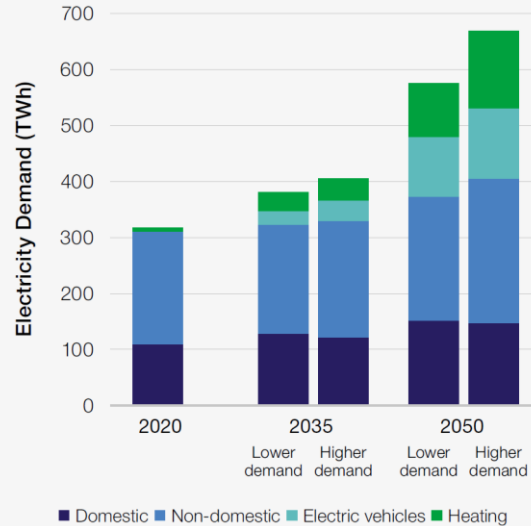


We will ensure that we deliver our 42 core commitments and other outcomes.

Electrification – What does the future look like?

Demand Consumption

FIGURE 3.2 - ELECTRICITY DEMAND, NET ZERO SCENARIOS

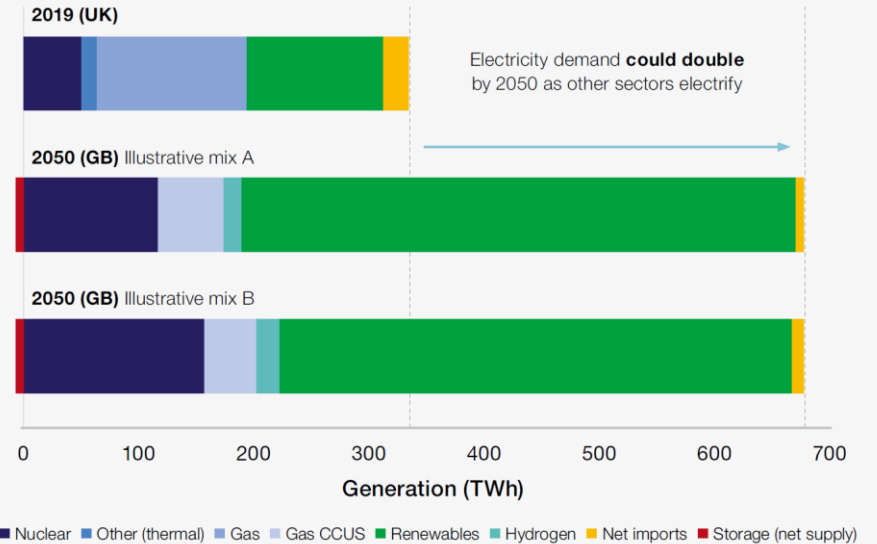


- ▶ BEIS analysis shows **electricity demand could double by 2050**
- ▶ **Power displaces petrol and diesel** in cars and, to some extent, gas for heating
- ▶ Difference in demand scenarios is **driven mostly by how much electricity replaces gas for heating or petrol and diesel in cars**

Source: BEIS analysis

Generation Supply

FIGURE 3.4 - ELECTRICITY MIX TODAY & ILLUSTRATIVE 2050 MIXES



Source: Energy Trends, table 5.1 and 6.1; BEIS analysis.

What is the scale of growth predicted in the next 30 years?

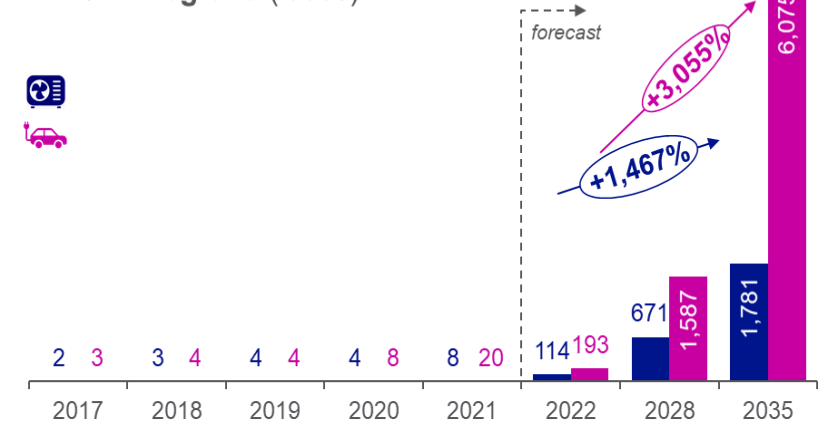
In the next 30 years the way that the electricity distribution network is used is going to change, as we use electricity to decarbonise sectors such as personal transportation and domestic heating.

Current National Grid Electricity Distribution projections predict an increase in energy consumption of 43% by 2030 and 70% by 2050, when compared to 2021 levels.

In addition, the amount of generation connected to the distribution network will continue to increase, we currently have ~11 GW connected but ~33 GW in the pipeline waiting to connect.

Growing Demand

Heat Pump and Electric Vehicle connections in NGED regions ('000s)^{1,2}



Low Carbon Technology Growth

We will invest around £1 billion in our network to increase capacity over the next 5 years.

We anticipate up to 1600 connections enquiries per day – 5 times the level we currently handle.

We will enable our network to support up to 1.6 million Electric Vehicles by 2028.

We will prepare our network to support 700,000 heat pump connections by 2028.

We will work with Local Authorities and Regional Government to assist them to develop their Local Area Energy Plans to achieve Net Zero.

Electricity System Flexibility

Flexibility is the ability to time-shift or change generation or consumption behaviour to be better aligned to the real-time balance of supply & demand or network asset limits.

	Demand Constraint	Generation Constraint
Demand Side Response (DSR)	Demand Turn Down	Demand Turn Up
Distributed Generation Response	Generation Turn Up	Generation Turn Down








Network Investment Options

Every 6 months we review the investment decisions we make on the network to ensure we are delivering the right capacity for customers.

 Total schemes assessed	121
 Flexibility	36
 Reinforce	24
 Reinforce with flexibility	24
 Signposting	22
 Remove	15

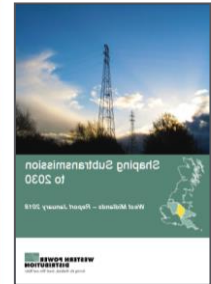
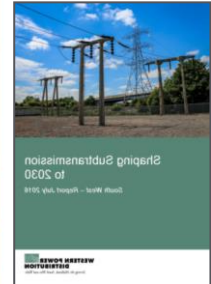
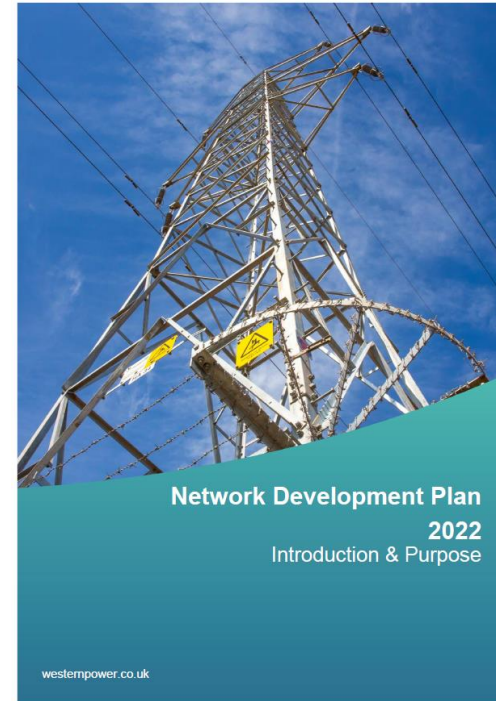
Our February 2023 Options Assessment report assessed almost £400m potential reinforcement schemes, with the majority being put to the market to be delivered by flexibility.

 <p>Flexibility indicates a decision to procure flexibility or to maintain the flexibility contracts currently in place to defer reinforcements.</p>	 <p>Reinforce indicates a decision to pursue traditional network reinforcement ahead of need without utilising flexibility.</p>	 <p>Reinforce with flexibility is when reinforcement is set to begin immediately (or is already underway), but flexibility is required to deal with the constraint in the interim.</p>	 <p>Signposting signals a decision to inform potential providers of future flexibility requirements whilst the need requirement is monitored.</p>	 <p>Remove signals a decision to remove the scheme from consideration in future DNOAs. All schemes will be re-assessed in future DNOAs until there is no option value left to realise.</p>
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Strategic planning process overview

Network Impact Assessment: detailed technical analysis of the impact of scenario projections on network design and operation.

- Now a Licence Condition requirement (SLC25B, the **Network Development Plan** outlines areas of Extra High Voltage networks where investment may be required. Previously known as ‘Shaping Subtransmission’.
- Examples of where this has influenced network investment during RIIO-ED2 include Warndon BSP, Hereford BSP and Taunton GSP 132kV running arrangements.



Whole System Working

We will be working with many different sectors to get UK to net zero

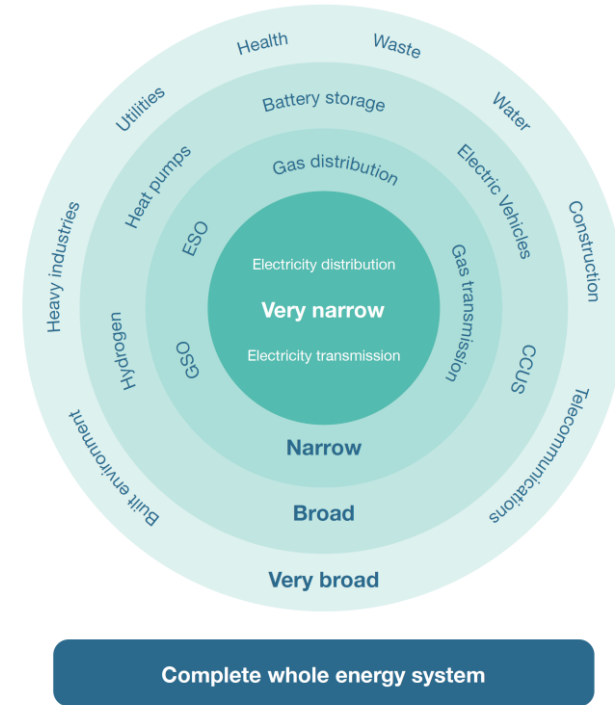
We will work with other vectors and sector to help accelerate decarbonisation

Electrification can be used by many sectors to support their decarbonisation pathways

We will promote whole system energy efficiency as a core principle

This will include efficiency in delivery capability – working with adjacent utilities to make sure we coordinate works where possible

Infrastructure development rates will increase over the next decades and the potential for greater alignment is large



So what will this look like over the coming years

Increased activities levels to reinforce the network which including major cable upgrades at the higher voltages.

Increased activities in local streets as we upgrade our low voltage network to cater for increased demand.

Increased activities as we upgrade the services to existing properties to support EV charging and heat pump connection.

The key is close co-ordination with the Highways Authorities to ensure these works can be done efficiently without major disruption.

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