

# A Grid Guide to... Accelerating UK Connections

*"There are more than enough projects to meet the government's 2035 clean power network goal. We will continue to connect viable projects as soon as is practicable, and use our influence to shape reforms that can enable delivery of longer-term clean energy targets."*

**John Pettigrew**  
CEO, National Grid



## UK electricity connections

- **The electricity industry has changed enormously** with a significant increase in renewable generation and demand connection requests
- **Policy and regulation needs to reflect this** increase in connection requests and changes in the types of projects
- **We're focused on enabling change** through smarter networks providing two-way flows with greater flexibility, and by building new infrastructure faster than before

## What are Grid connections

### Connections enable

- Generators to supply power onto our networks
- Domestic and industrial demand to be met
- Storage technologies

### Connections require

- Reinforcement works and network upgrades to ensure sufficient capacity
- Physical 'plug in' points at substations

### Current connections process

#### 1. Apply and receive an offer

The ESO<sup>1</sup> manages the connections pipeline on a 'First come, first served' basis

#### 2. Connection design

UK Electricity Transmission applies modelling assumptions provided by ESO to design connections

#### 3. Build the connection

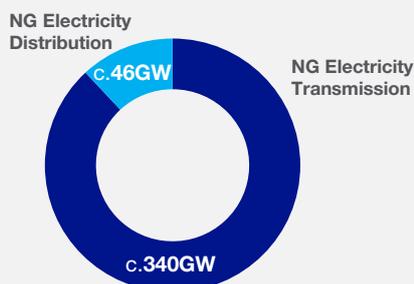
UK Electricity Transmission delivers physical connections

#### 4. Connect to and operate within the system

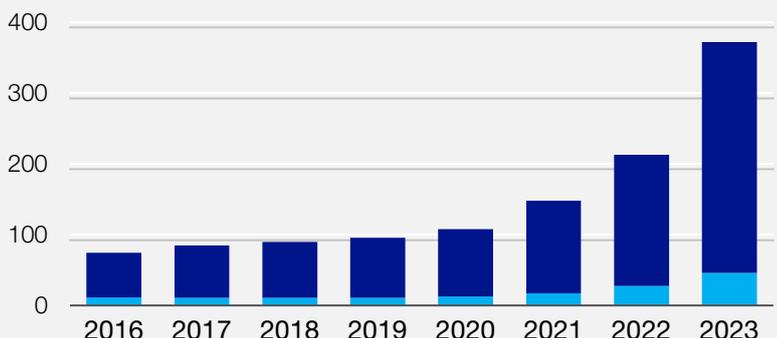
Nearly **400GW** of projects in the connection pipeline across our UK networks, which is over **5x** the amount needed to meet the UK Government's 2035 decarbonised electricity system commitment.<sup>2</sup>

## We have line of sight to net-zero

### Current pipeline



### Exponential pipeline growth (GW)



1. Electricity System Operator

2. Based upon latest NGET and NGED projections, using ESO's latest FES scenarios and DFES scenarios

# Why the connections pipeline has grown so large

## 'First come, first served' approach

Stalled projects delay those ready to connect

## Queue position retained too easily

Lack of project milestones within contracts  
Delayed projects can push back connection dates impacting subsequent lead times

## Low barriers to entry

A large volume of highly speculative applications

## UK Electricity Transmission

### Where we stand today

#### The pipeline is growing exponentially

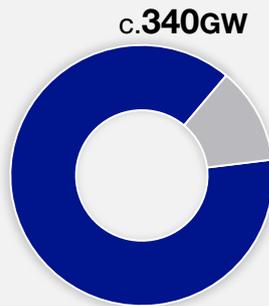
- c.340GW in our transmission pipeline - vs c.65GW installed capacity
- 6x the capacity actually needed to enable UK's 2035 decarbonisation target

#### Forecast capital expenditure

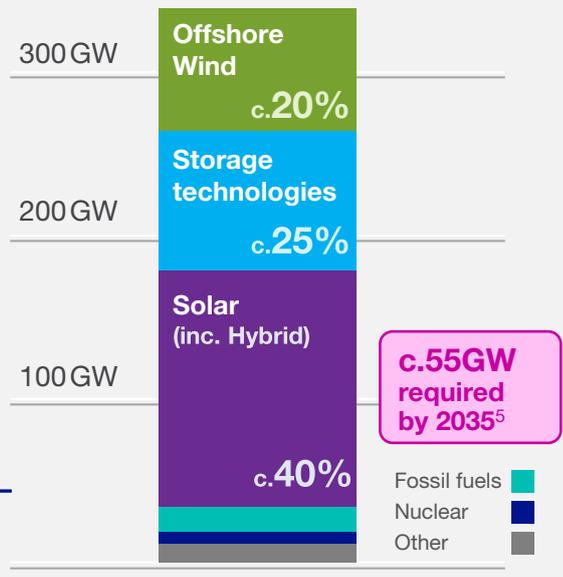
RIIO-T2<sup>1</sup>: c.£11bn<sup>2</sup>

of which: c.£3.5bn: connections<sup>3</sup>

c.£3bn: ASTI projects<sup>4</sup>



#### Current NGET pipeline



### Progress so far

#### Delivering record breaking connections

## >3GW

connected across 2023

- World's largest offshore wind farm – Dogger Bank
- World's longest subsea interconnector – Viking Link
- UK's first transmission level solar farm – Larks Green

enough capacity to power

## c.8.5 million homes<sup>6</sup>

#### Connections reform progress

#### Working with ESO, accelerated 10GW of battery storage

- 19 projects expedited by an average of 4 years
- Equivalent of c.90% of battery storage projects required by 2035<sup>4</sup>

#### 3GW released through ESO's Amnesty initiative<sup>7</sup>

#### Queue Management proposal approved

- Milestones introduced for projects to retain queue position

#### ESO's reformed connection process to go-live in 2025

- Will enable a 'first ready, first connected' approach

1. Price control from 1 April 2021 to 31 March 2026

2. Estimated capital investment in line with 5 year framework provided at HY24 results

3. Includes c.£1.5bn new connections and c.£2bn network reinforcement

4. Accelerated Strategic Transmission Investment relating to 17 x projects in our NGET licence to enable UK governments 50GW offshore wind target

5. To meet UK Government's 2035 decarbonised electricity sector target.

Based upon latest NGET projections, using ESO's latest FES scenarios

6. Once assets at full capacity

7. And Scottish and Southern Electricity Networks, and SP Transmission

## What we're advocating for

### Ofgem's Connection Action Plan

- Aims to raise barriers to entry
- 'Connect or move' approach

### Strategic Spatial Energy Plan

- Enables anticipatory approach to network planning
- Key role for the FSO

### Planning reform and community benefits through the Transmission Acceleration Action Plan

- Shorten delivery of new transmission infrastructure to 7 years
- Strategic Spatial Energy Plan commitment
- Updated National Policy Statements; planning guidelines
- 'Minded to' position on community benefits

## UK Electricity Distribution

### Where we stand today

#### Exponential growth in generation & industry scale demand connections

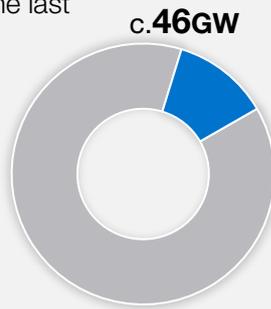
- **>156GW** of distribution projects in GB pipeline
- **c.46GW** in NGED pipeline
- **c.12GW** current installed capacity on network

#### Steady rise in demand connections

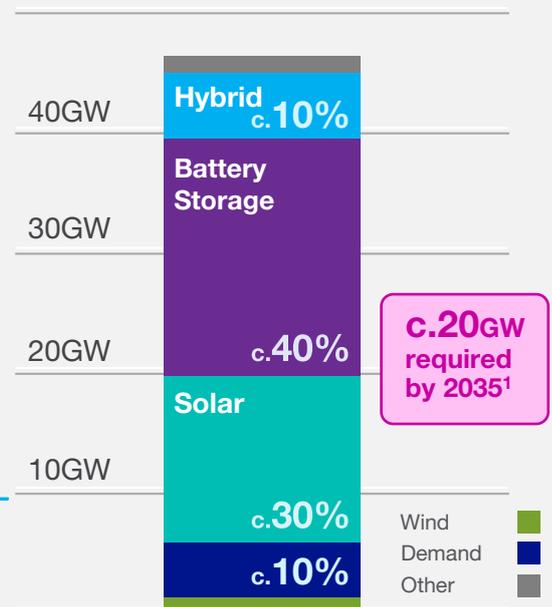
- **900%** increase in requests over the last 5 years
- **More EV charge points** connected in the last 2 years than all previous years combined
- **8x > EVs today** than 5 years ago
- **3x > heat pumps** than 2019

#### Capital Expenditure plans unchanged

- ED2 Forecast capex: **c.£7.5bn<sup>3</sup>**
- **c.£2.1bn**: new connections



#### Current NGED pipeline



## Progress so far

### Delivering connections HY24<sup>2</sup>

**51** renewable generators

**7.7k** EV chargers

**750** energy storage solutions

**3.5k** heat pumps

**15.4k** solar installs

**>700MW** installed so far

### Connections reform progress

#### Delivering against ENA's<sup>4</sup> 3-point plan

- **Queue management:** Removed 45 'zombie' projects or 1.2GW from the NGED pipeline where milestones not met
- **Streamline coordination with TO's and TSO:** 10GW of capacity released for clean generation via non-firm contract offers
- **'First ready, first connected':** approach has led to an average 5 years improvement in connection dates

#### Growing DSO capability

- Largest procurer of flexibility last year
- Expanding local network flexibility services

1. To meet UK Government's 2035 decarbonised electricity sector target. Based upon latest NGED projections using on DFES scenarios.

2. 1 April 2023 to 30 September 2023

3. Nominal capital expenditure across ED2 price control which runs from 1 April 2023 to 31 March 2028. Includes capex funded by contributions and uncertainty mechanisms

4. Energy Networks Association

## Collaboration with key stakeholders to develop innovative solutions

### Clearview connect:

- Consolidates and simplifies connections data for customers and developers. Enables customers:
  - to determine quickest and cheapest connection
  - to view potential timescales and contract terms

### Self-serve connection products:

- 60% of EV charger applications approved in 2 seconds

### Flexibility solutions:

- Equinox heat pump trial
  - Customers turn down heat pump usage during peak demand
- Exploring vehicle-to-grid opportunities to provide emergency power for vulnerable customers

### Working with energy suppliers:

- Octopus Energy to perform upgrade and replacement works on heat pump fuses, speeding up connections



## Looking Ahead

### Focus on accelerating reforms



### Delivering action needed at pace



### Further collaboration with key stakeholders



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