Ensuring local electricity distribution networks are fit for purpose for the UK's net zero goals

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26 February 2025

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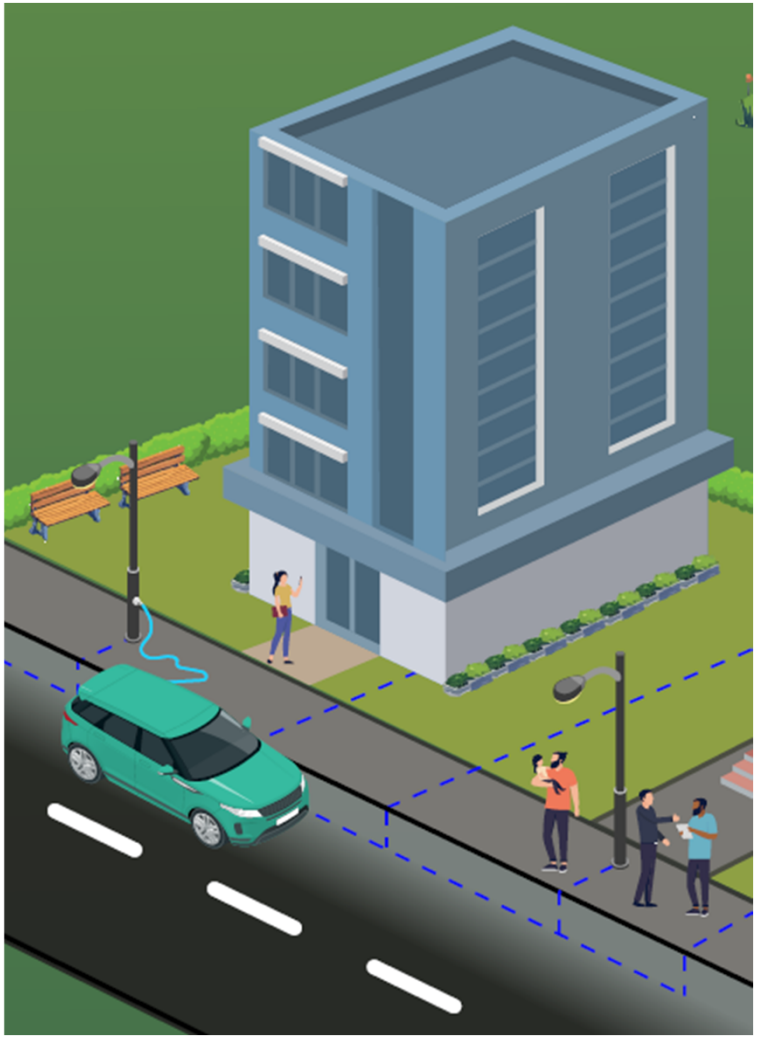
The distribution network powers all homes and most businesses



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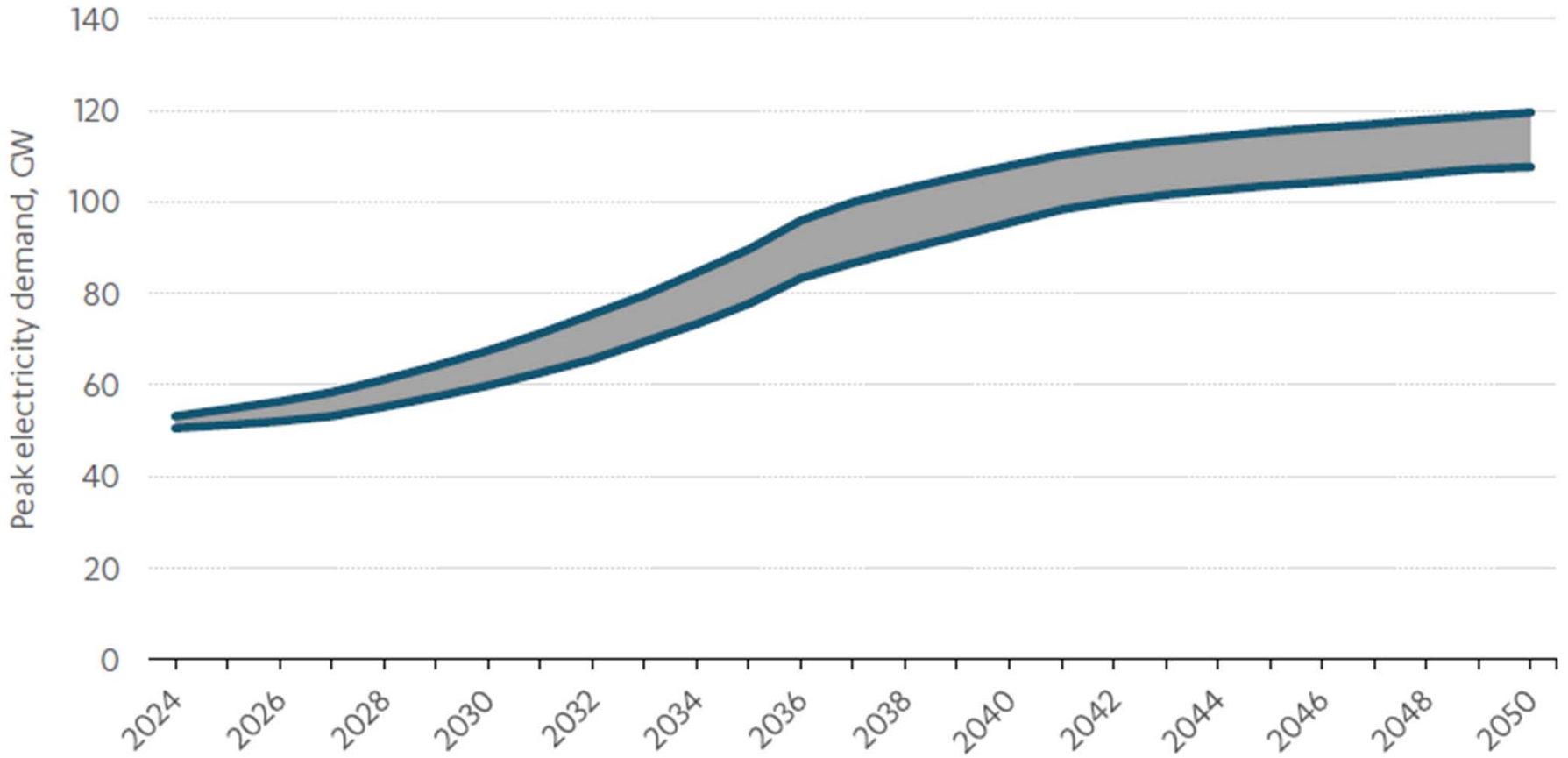
Network demand will increase, but it's not certain where and when change will happen

Peak electricity demand from 2024 to 2050, core model scenarios



Sources: Regen and EA Technology's analysis for the Commission, using Electricity System Operator's 'Future Energy Scenarios' 2023 and the second *National Infrastructure Assessment* in combination with distribution network operators' data.

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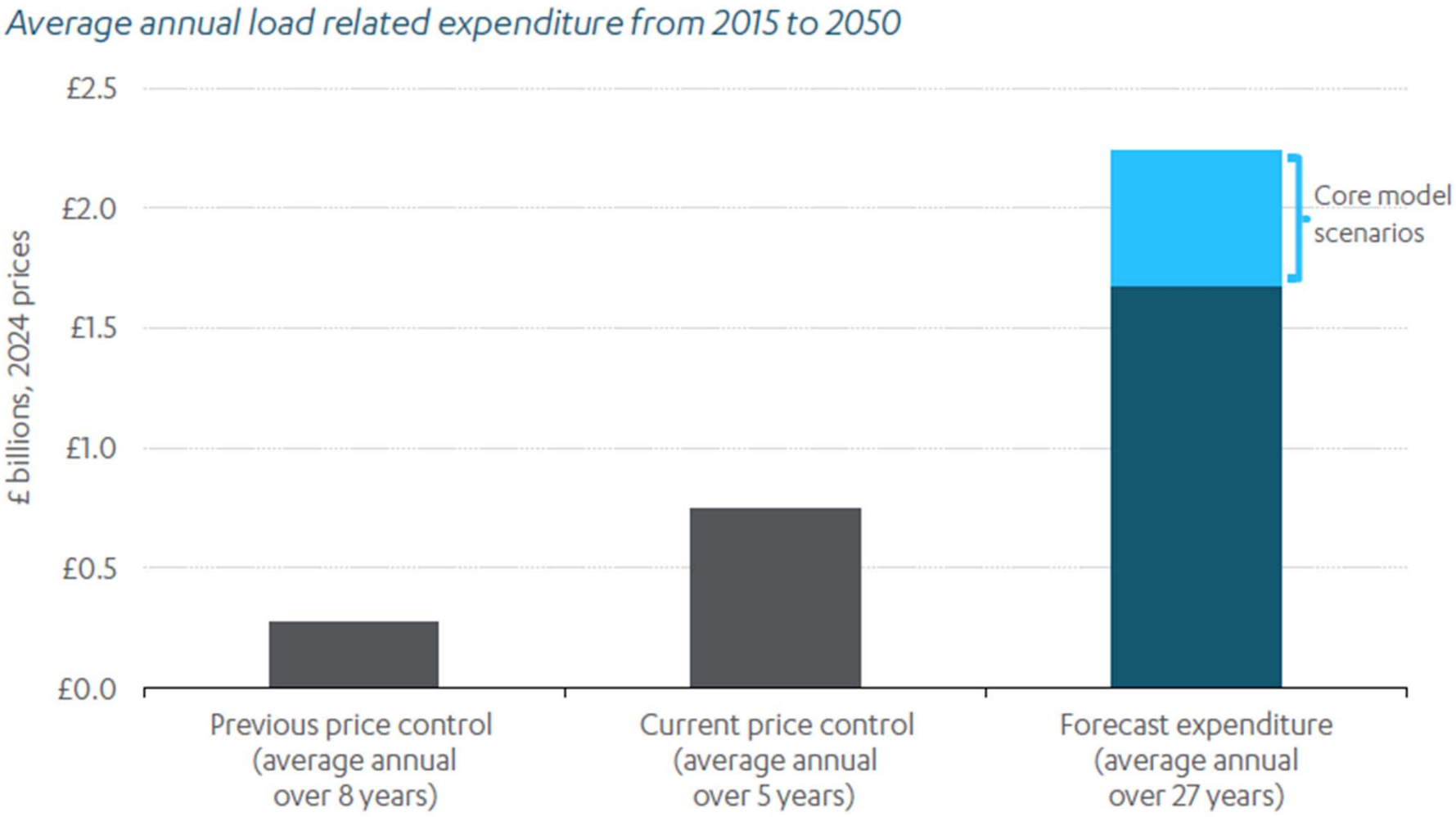
A step change in investment is required, as well as a more proactive approach



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Sources: Commission analysis using Regen and EA Technology's modelling and data from the Department for Energy Security and Net Zero and Ofgem.

Commission recommendations aim to deliver proactive investment effectively

Strategy
(Defining system needs)

- Embedding effective strategic planning
- Stronger strategic direction from government

Regulation
(Translating system needs into network requirements)

- Reforming and simplifying price controls
- Further connections reform
- Continuing to digitise and to enable flexibility
- Reviewing security of supply standards

Delivery
(Enabling and accelerating build)

- Tweaks to the planning system
- Actively managing supply chain and skills

Getting the overall level of proactive investment right is the core objective

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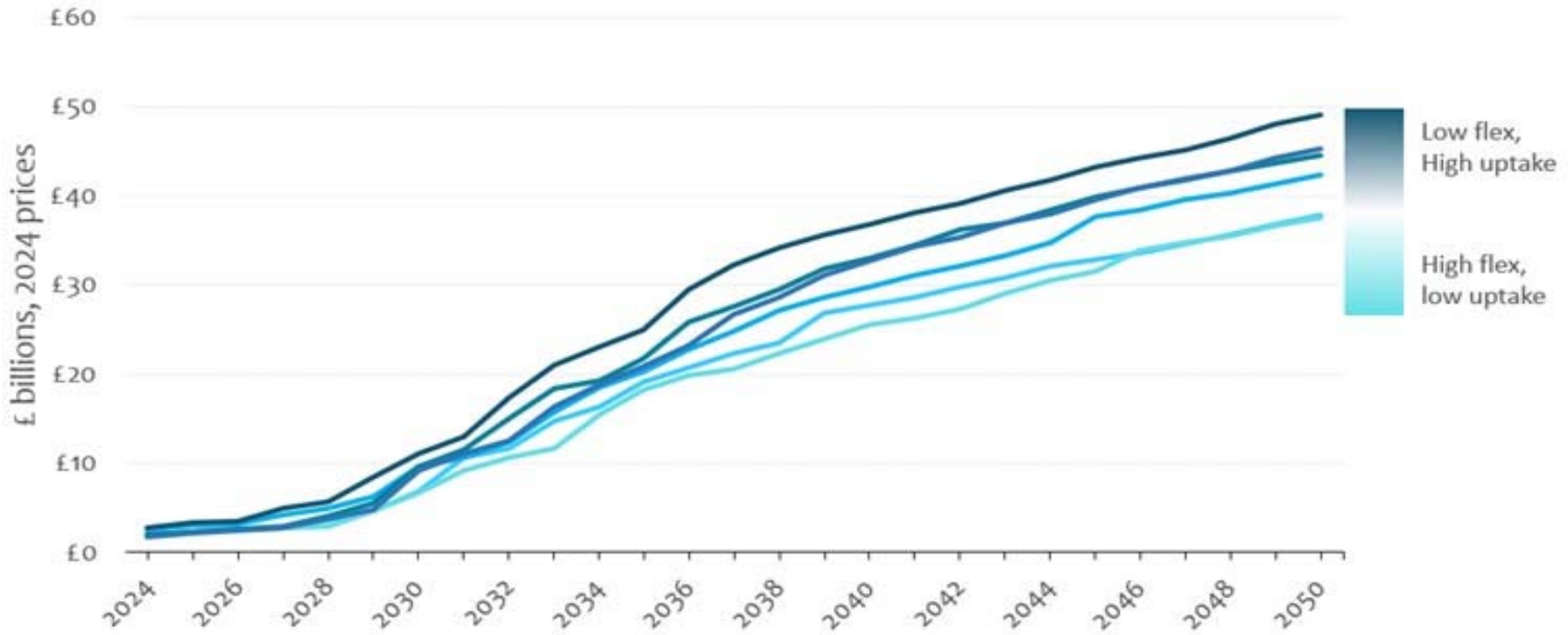
Flexibility can reduce the level of investment required

Cumulative load related expenditure from 2024 to 2050



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Reliability is high, and must remain high

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Low voltage case studies show diversity of local impacts

7 local case studies across different urban, suburban and rural networks based on NPg and NGED data.

Tested different locations of low carbon technologies and how this affected what interventions were required and when

One case study network had **no need for physical intervention**

Four of the seven case study networks required **transformer upgrade**

Two case study networks experienced **thermal cable constraints**

2035 was the most common year **for interventions** being initially required

Three of the four networks requiring **transformer upgrades were rural**

Two of the four networks **could** have reinforcement **delayed by flexibility** procurement

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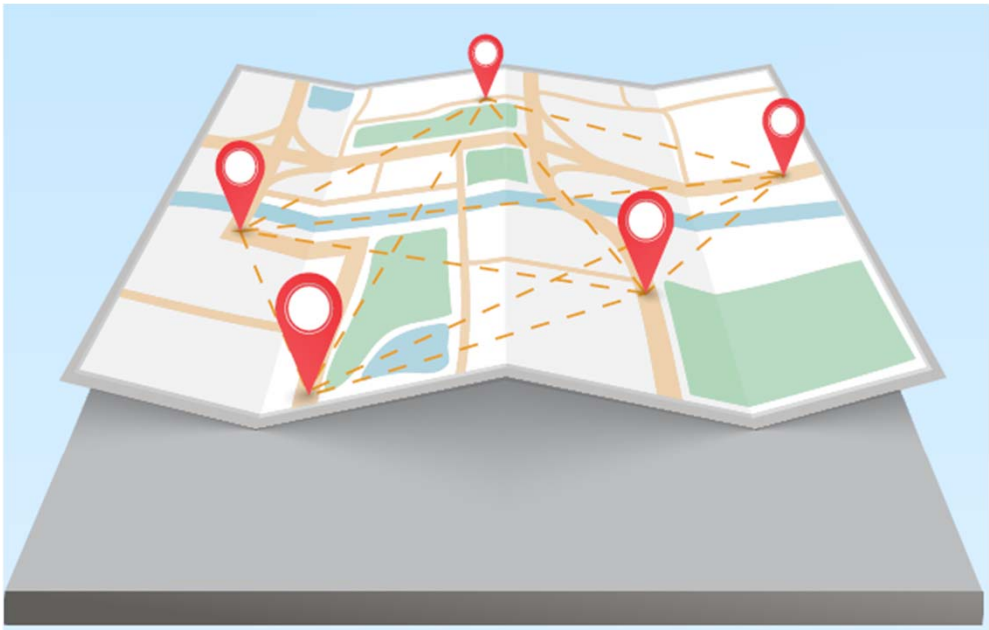
Strategic planning can underpin proactive investment



11 regional strategic plans to accelerate strategic investment

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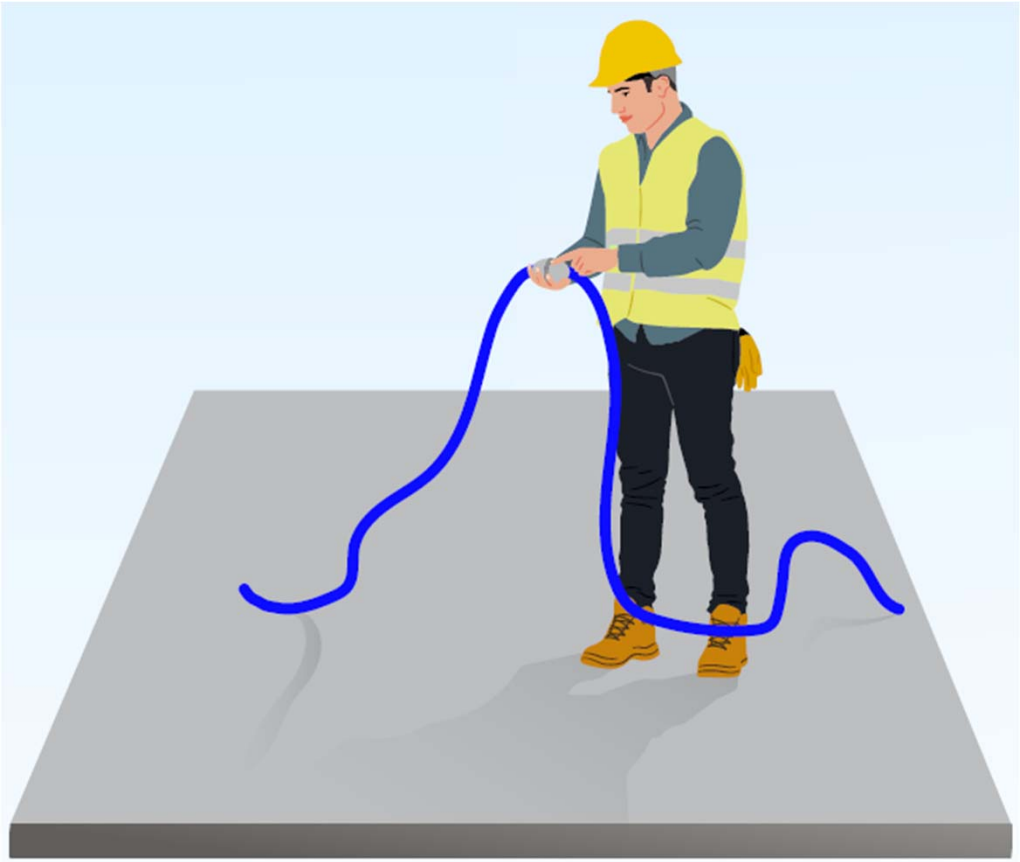
The connections process must improve



Timely customer friendly connections process

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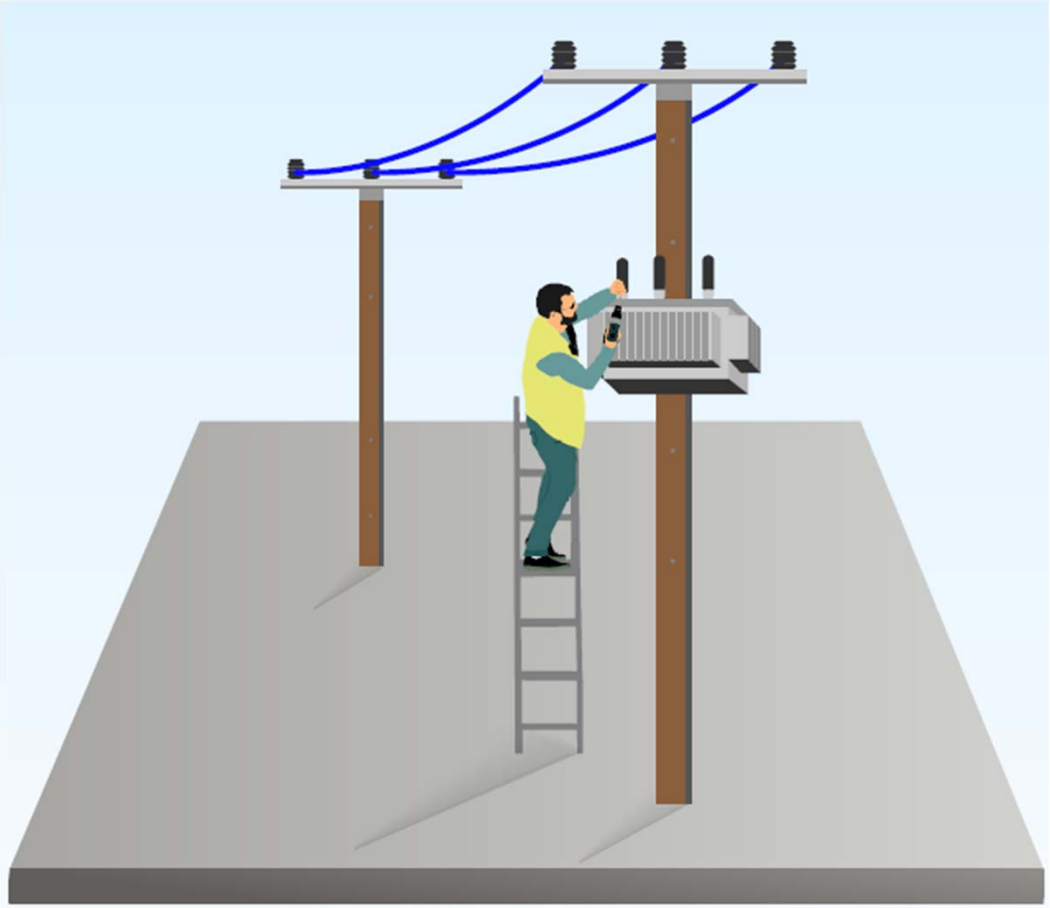
Most electricity network connections require reinforcement

Length of the electricity network queue as of July 2024

Length of the queue	Gigawatts (GW)	Percentage of projects
No reinforcement	35	47%
Transmission + distribution reinforcement	16	5%
Transmission reinforcement	52	15%
Distribution reinforcement	18	18%
Awaiting decision	51	14%
Total	**172**	**100%**

Source: Electricity Networks Association analysis of distribution network operator data.
Note: Percentage of projects does not add to 100% due to rounding.

Targeted changes to planning can speed up delivery



Reforming planning to enable network upgrades

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Skills needs must be more actively managed across the sector

50,000 - 130,000 additional workers by 2050 across electricity networks

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Thank you and any questions

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