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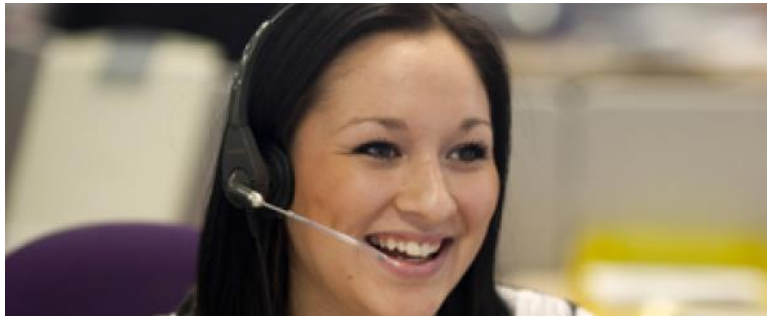
The Future Energy Landscape



Bring
Energy
to Life

David Wright, National Grid
Director Electricity Transmission & Chief Electricity Engineer
September 2018

The energy revolution: to date

- Energy is **critical** to the **safety and quality of life** of people, and to the **economy.**
- We should be proud of the **transformation** we have already enabled

26 coal power station closures since 2010

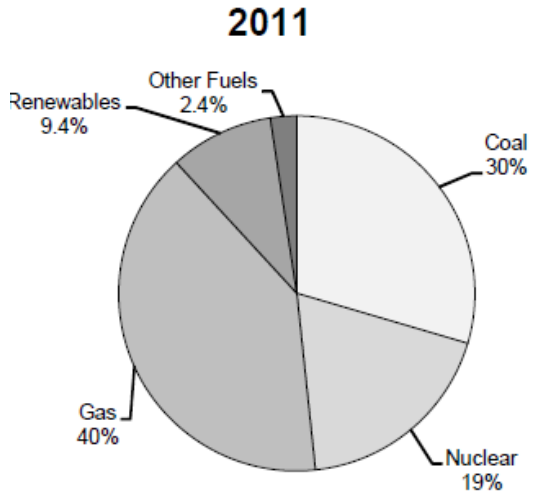
12 days without coal in June 2018

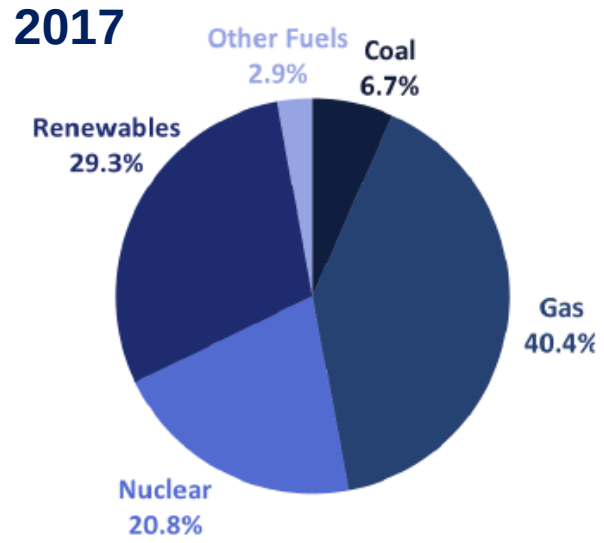
Over 50% energy from low-carbon sources

8 consecutive days with >8GW solar in summer 2018

Operated at Carbon Intensity below 2030 Targets in August

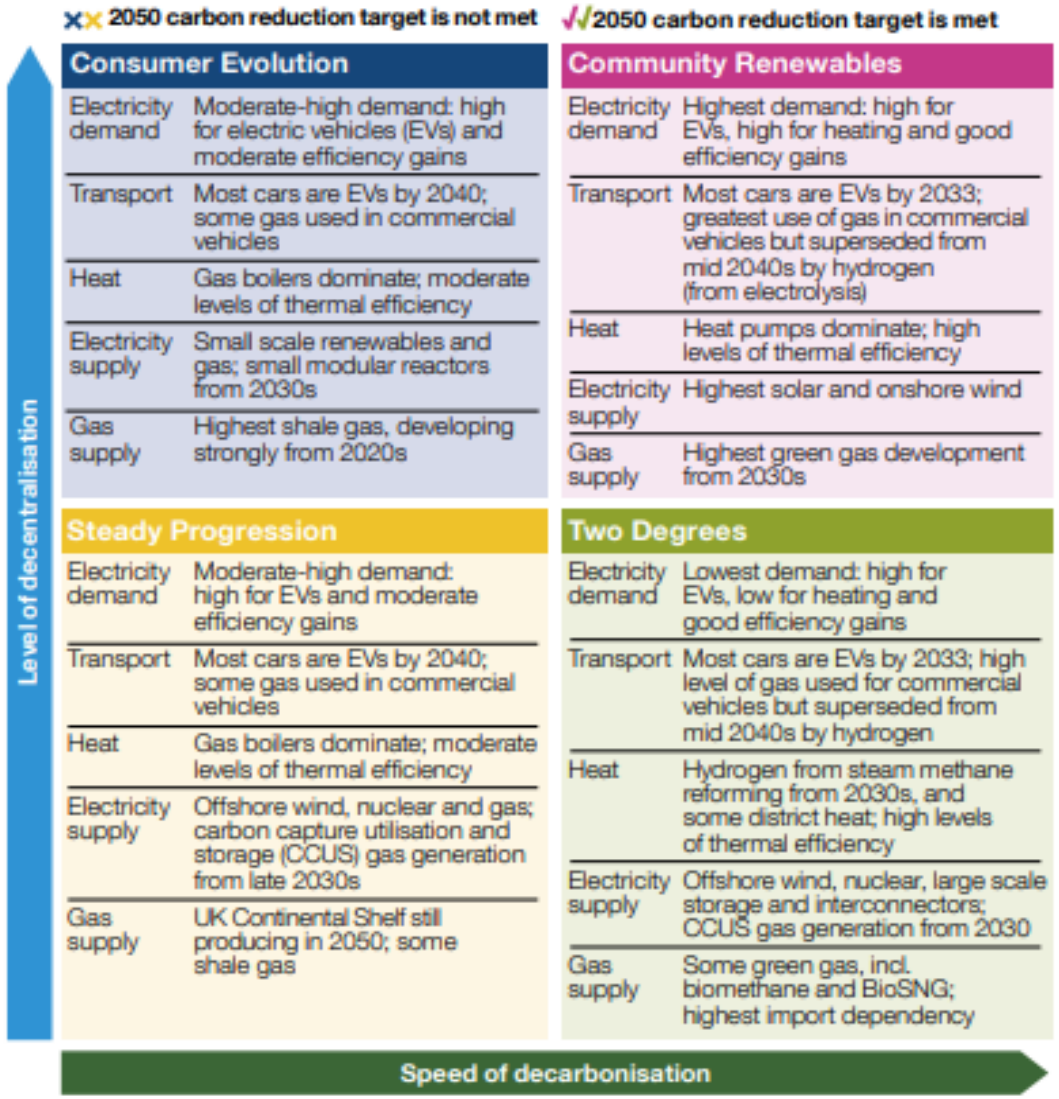
- The rate and scale of change has been **unprecedented**



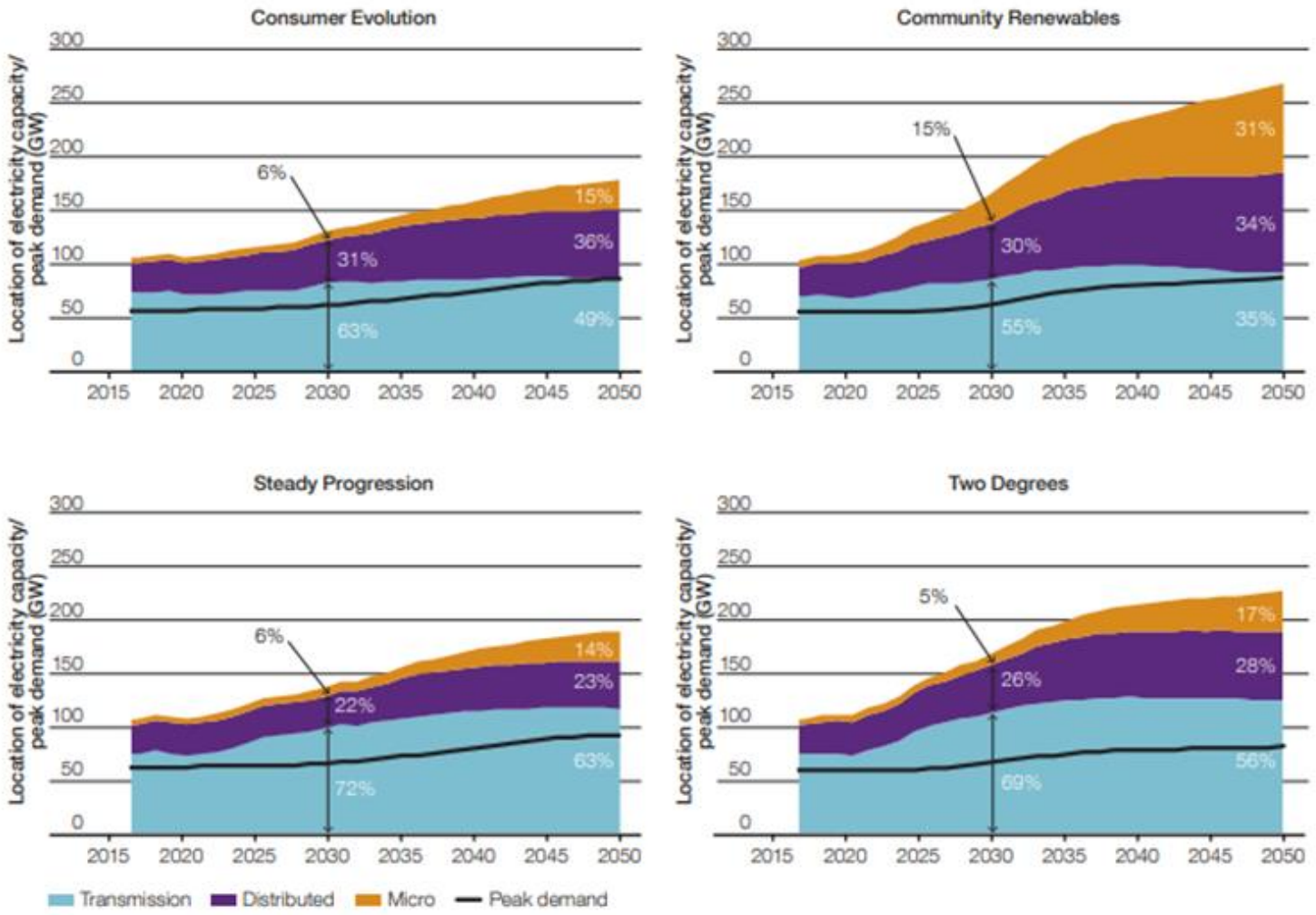


The energy revolution: the future

- If we try to predict the future, the only thing we know for certain is we will get it wrong!
- The **Future Energy Scenarios** produced by NGESO look to set out a range of **credible futures**.
- Heavily influenced by the trends of:
  - **D**ecarbonisation
  - **D**ecentralisation
  - **D**igitsation
- **Cross-industry impacts** are key, for example:
  - Heat decarbonisation
  - Transport



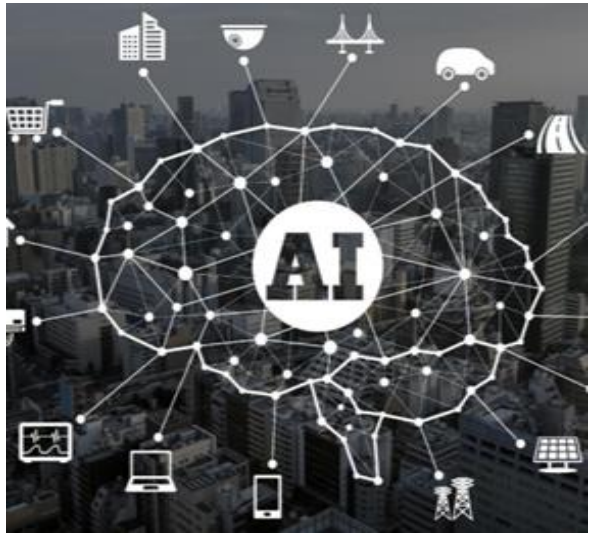
What does this mean?



- Increase in capacity from **103GW** today to between **189 and 268GW** by 2050
- Up to **65%** of generation could be local by 2050
- Electricity demand is expected to grow significantly by **2050**
- Potentially **36m EVs** on the road by 2040

How do we need to respond?

- **Effective collaboration** across the industry is more critical now than ever
- **Shape** the debate
- Deliver critical infrastructure to **maintain reliability** of energy supply
- Develop **agile, efficient and flexible** working practices
- Drive **innovation** and creativity of thinking
- Embrace **digital**



We need the right people to be successful…

- Engineering accounts for **20% of UK's Gross Value Added** and half our exports
- **Remains a shortage of Engineers and a lack of diversity:**
  - 94% of the engineering workforce is white
  - 91% are male
- We need to combine knowledge with **diversity** and **creativity** of thinking
- **The need for data & analytics capabilities will grow:**
  - Cyber Security
  - Embrace opportunities for digitisation
  - May need to re-train and upskill
- We all have an obligation to **work together to do more**

1.8 million

new engineers required to be trained by 2025

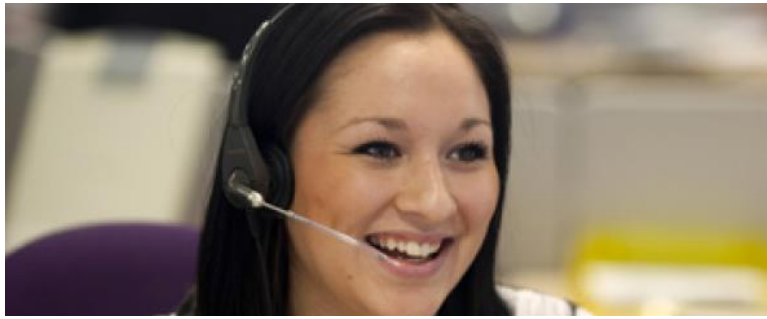
Annual demand for at least **124,000** engineers and technicians with core engineering skills

The skills shortage is costing the STEM sector **£15bn**

Summary

- The energy revolution is already happening, and we should be **proud** of what we have achieved
- We will continue to see the sector evolve with changes associated with **decarbonisation, decentralisation and digitisation**
- These changes will impact how energy is **supplied, generated, transmitted and consumed**
- **Energy infrastructure** and transmission and distribution level will enable this change
- We need to continue to adapt, ensuring we are **proactive** and **embracing the opportunities** that change brings
- We need the **right people**, with the right skills to be successful in the long term – we all have an obligation to do more and understand what skills we need in the future

Thank You



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