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# The changing dynamics of the UK renewable energy market

**Ben Guest, Gresham House**

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# EXECUTIVE SUMMARY

- >£80bn\* investment opportunity in renewables
- Decarbonise electricity + ‘electrify’ everything
- “Collocation” optimises potential for risk-adjusted returns



\*Gresham House analysis, November 2021

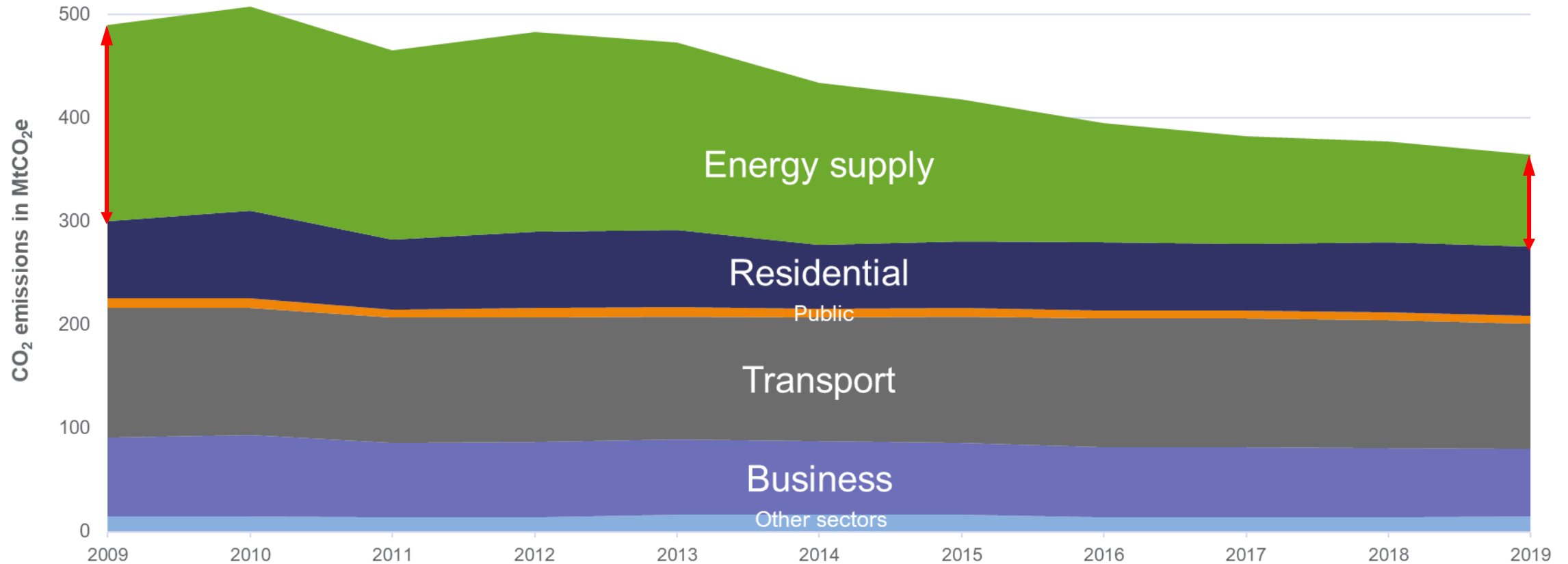
A photograph of a wind farm in a field during sunset. The sun is low on the horizon, creating a bright orange glow and long shadows. Several wind turbines are visible, silhouetted against the sky. The foreground is a field of tall grass or crops. The sky is filled with clouds, and the overall atmosphere is warm and serene.

**LET'S GO ELECTRIC!**



# KEEP UP THE GOOD WORK, RENEWABLES

Renewables have driven c.80% of the drop in CO<sub>2</sub> emissions in the last decade

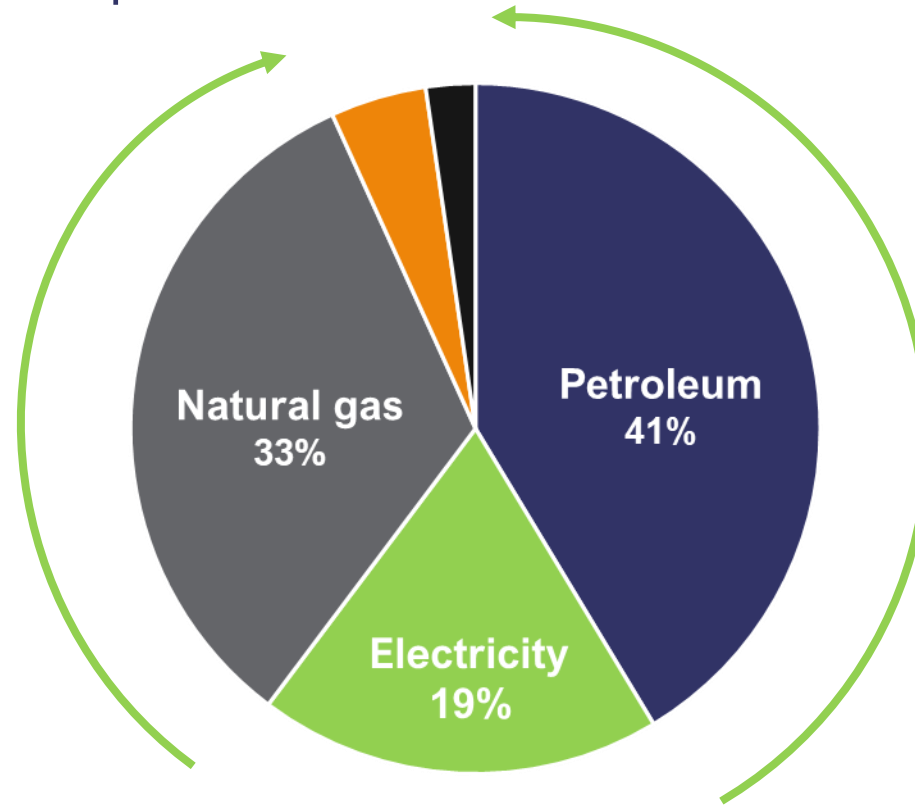


Source: BEIS, DUKES, 2021

*Past performance is not a reliable indicator of future performance.*

# KEEP UP THE GOOD WORK, RENEWABLES

...so let's move everything to clean power



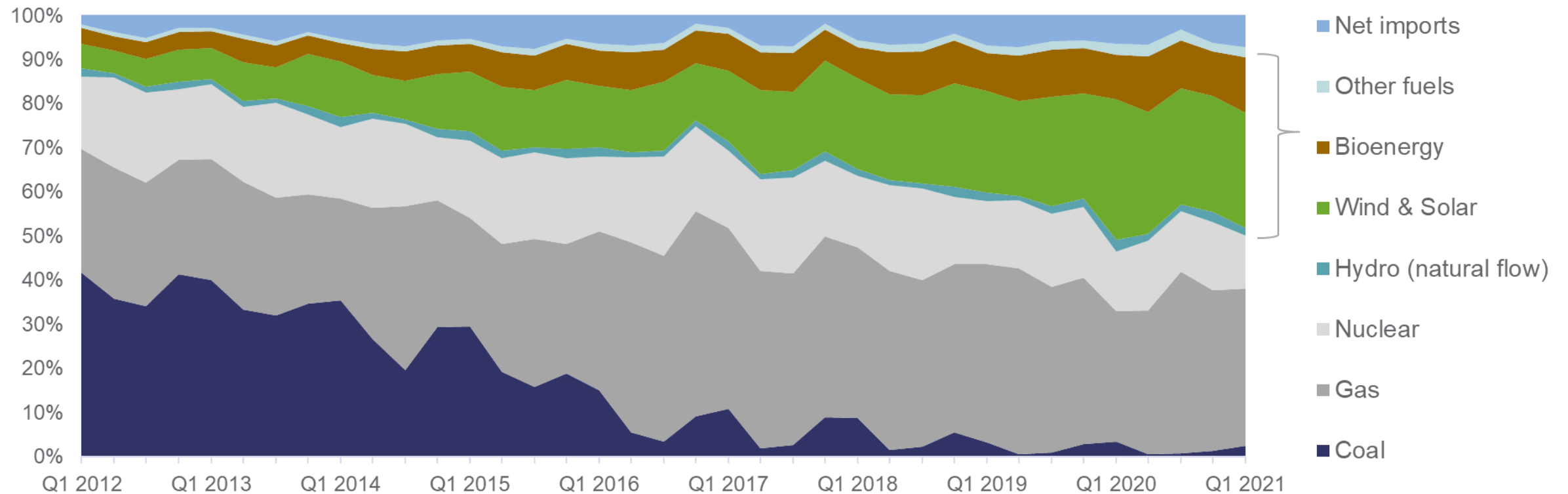
■ Petroleum   ■ Electricity   ■ Natural gas   ■ Bioenergy & waste   ■ Coal & other

Chart source: BEIS, Gresham House, November 2021

# RENEWABLES HAVE A LONG WAY TO GO

Renewables' market share forecast to double to 80% in 2050 - in an electricity mix that also doubles<sup>1</sup>

UK electricity generation mix 2012-2020



1. BEIS, 2021

Past performance is not a reliable indicator of future performance.

# THE £80BN+ INVESTMENT OPPORTUNITY<sup>1</sup>

## Electricity mix today vs. 2050 - illustrative

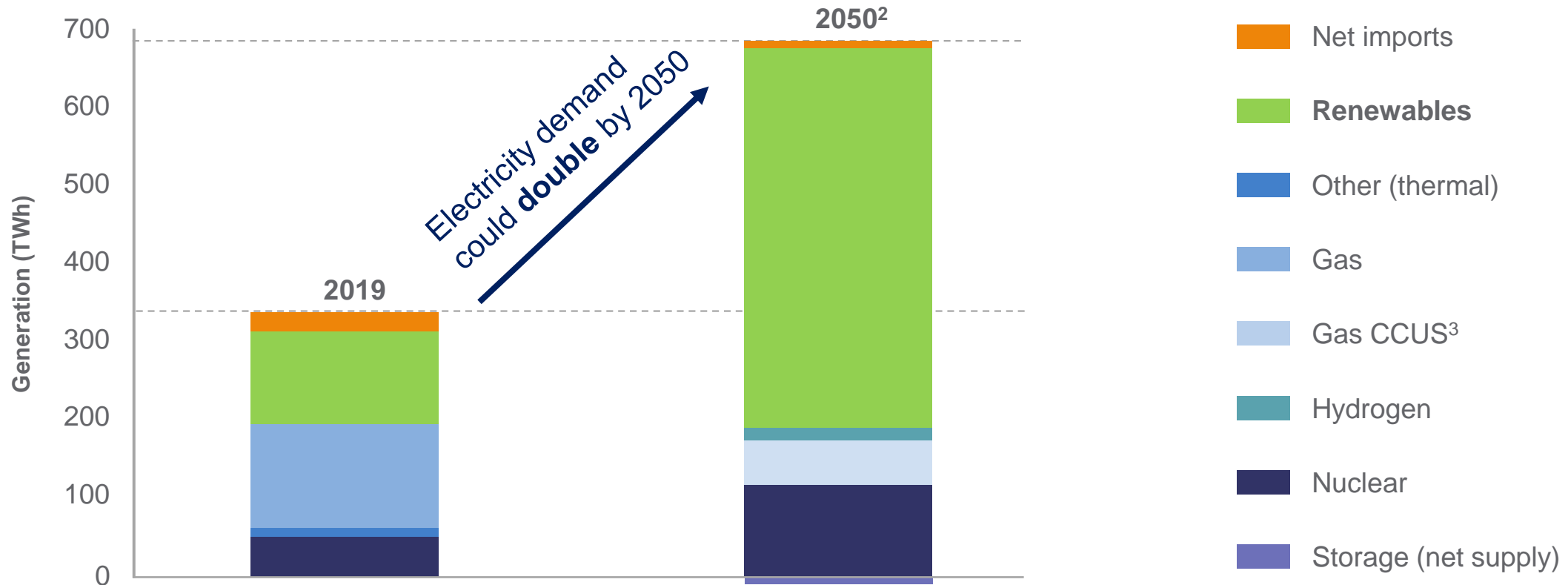


Chart source: UK Government Energy White Paper; Energy Trends, table 5.1 and 6.1; BEIS analysis

1. Gresham House analysis, November 2021

2. Illustrative data, not a forecast

3. Carbon capture, utilisation and storage

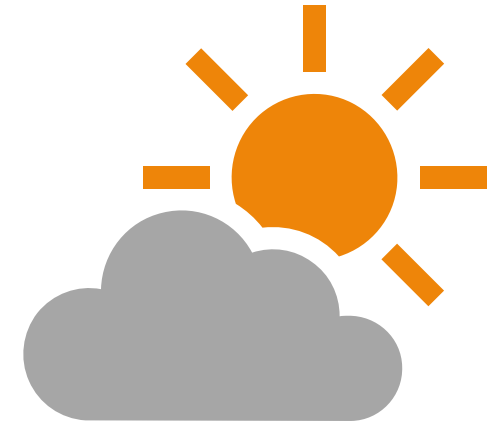
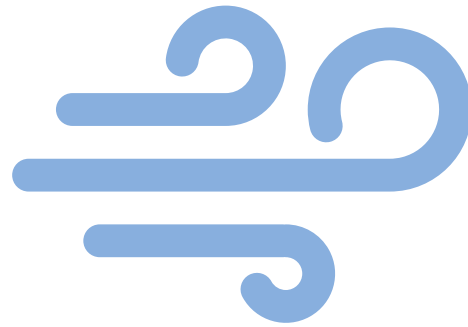
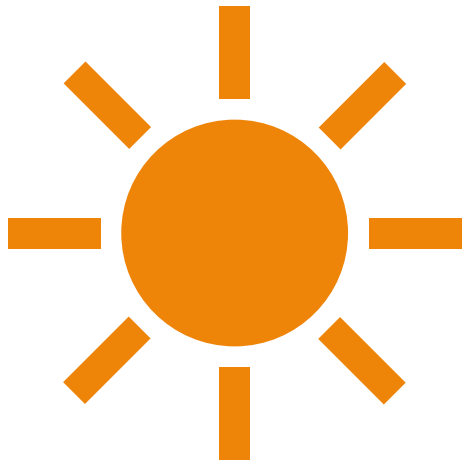
**Past performance is not a reliable indicator of future performance.**



# LET'S TALK ABOUT THE WEATHER...

But there's a catch with renewables: it's called intermittency

Weather patterns are largely predictable, so intermittency must be managed



# THE £80BN+ INVESTMENT OPPORTUNITY<sup>1</sup>

Electricity mix today vs. 2050 - illustrative

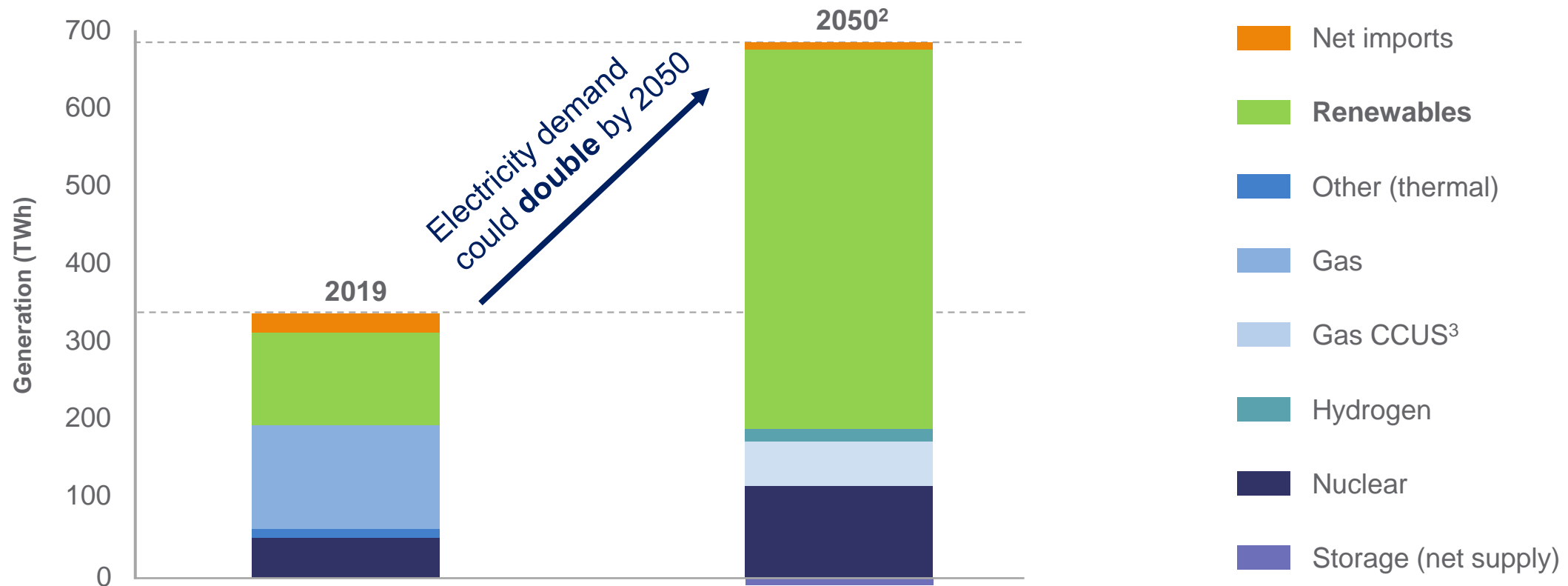


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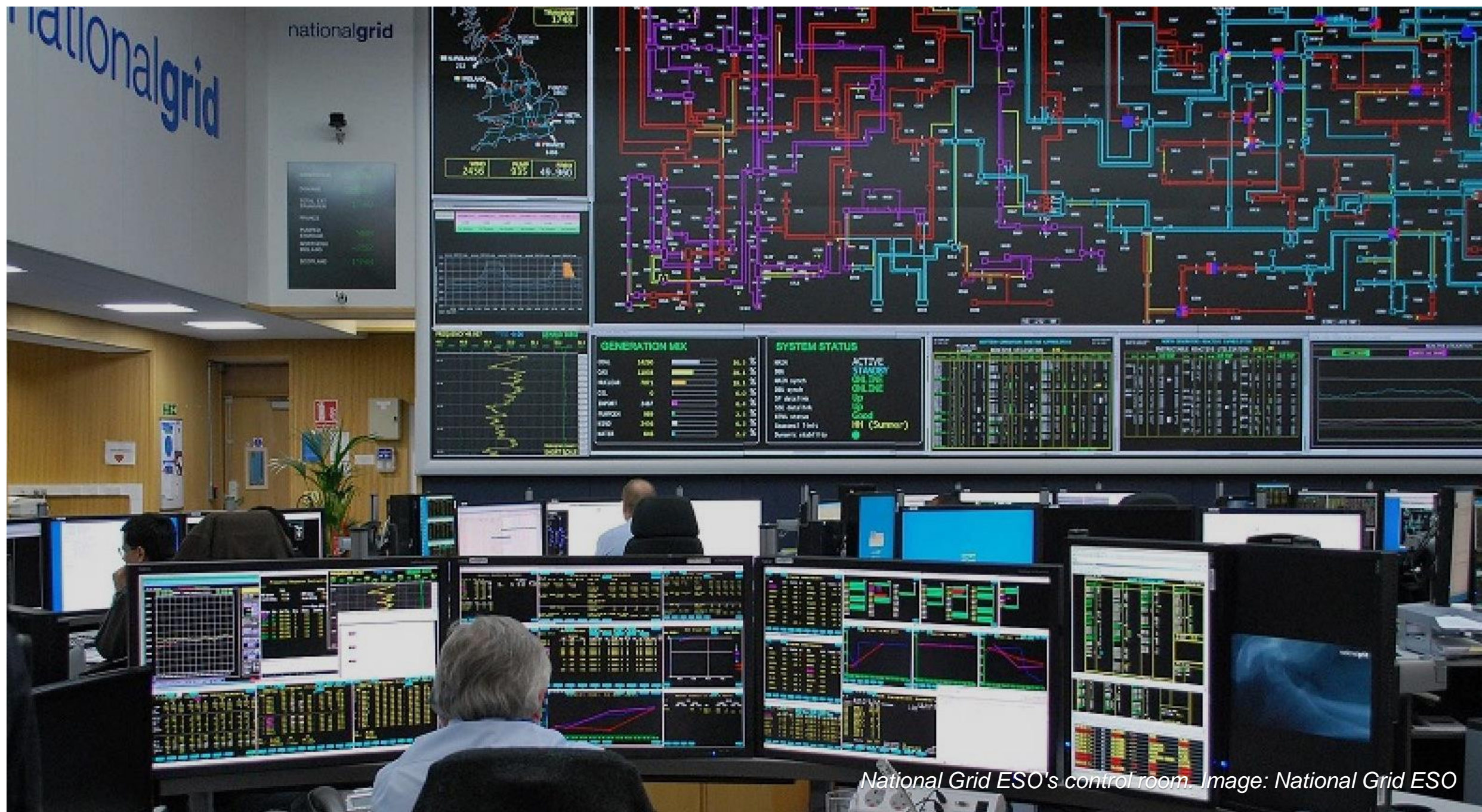
1. Gresham House analysis, November 2021

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**Past performance is not a reliable indicator of future performance.**





National Grid ESO's control room. Image: National Grid ESO



# INTERMITTENCY CREATES PRICE VOLATILITY

...but there's opportunity in the chaos

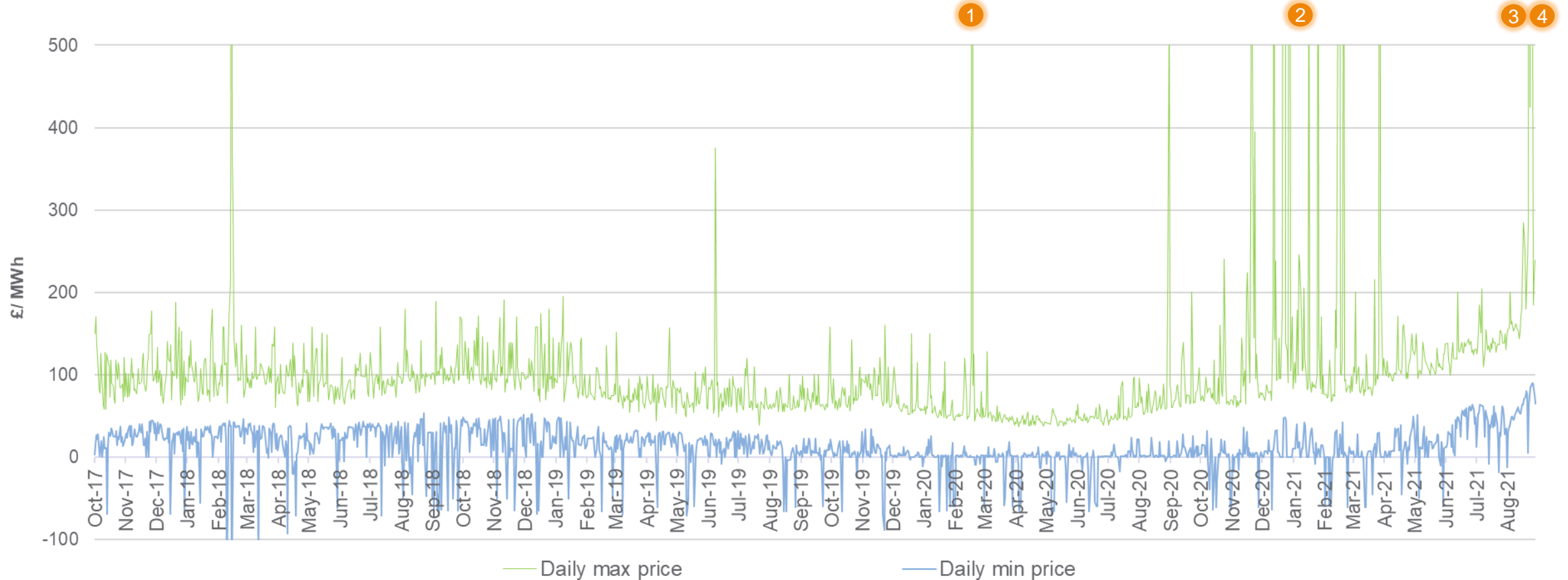


Chart source: Elexon, September 2021

**Past performance is not a reliable indicator of future performance.**

1. 4 Mar 2020 - £2,242/MWh 2. 8 Jan 2021 - £4,000/MWh 3. 7 Sep 2021 - £4,038/MWh 4. 9 Sep 2021 - £3,404/MWh



# AN OPPORTUNITY FOR BATTERIES

Batteries *collocated* with renewable assets can achieve two things:

1. A cost-effective energy transition
2. Improved risk-adjusted returns potential
  - ✓ Approx. 2x the revenues<sup>1</sup>
  - ✓ Counter-cyclical
  - ✓ Shared capex
  - ✓ Shared costs



*Shown for illustrative purposes only - not an investment recommendation.*

1. Gresham House analysis, November 2021

**Past performance is not a reliable indicator of future performance. Capital at risk.**



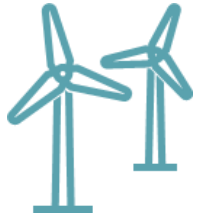


Gresham House Energy Storage Fund plc asset – Glassenbury (40MW)  
*Shown for illustrative purposes only - not an investment recommendation.*



# IT GETS BETTER!

Creating a 'secure income' revenue model from:



## 1. Renewable energy generation

*Power Purchase Agreements*



## 2. Tradable capacity

*Asset Optimisation Contracts*



## 3. Standby capacity

*Capacity Mechanism Contracts*

# SUMMARY: SECURE INCOME FROM ENERGY & STORAGE

- ✓ Mature technology
- ✓ Asset backing
- ✓ Contracted income
- ✓ Diversified exposure
- ✓ Improved yield
- ✓ Improved potential for risk-adjusted returns



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**You have the power!**

