

Accelerating the Transition to a Zero Carbon Electricity System: An Action Plan for Streamlining Connection Applications

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Agenda

- ✓ Transition to a Net Zero GB Network
- ✓ Challenges arising with increased connections
- ✓ Solutions with Connection Reforms
- ✓ Accelerating Energy Storage Applications
- ✓ Future Outlook



Transition to a net zero GB network

- Less dispatchable generation,
- More asynchronous generation
- More variable sources (renewables)
- Generation moving to different areas



Less dispatchable generation



More asynchronous generation



More variable sources of generation



Generation moving to different areas

Future Operability Challenges¹

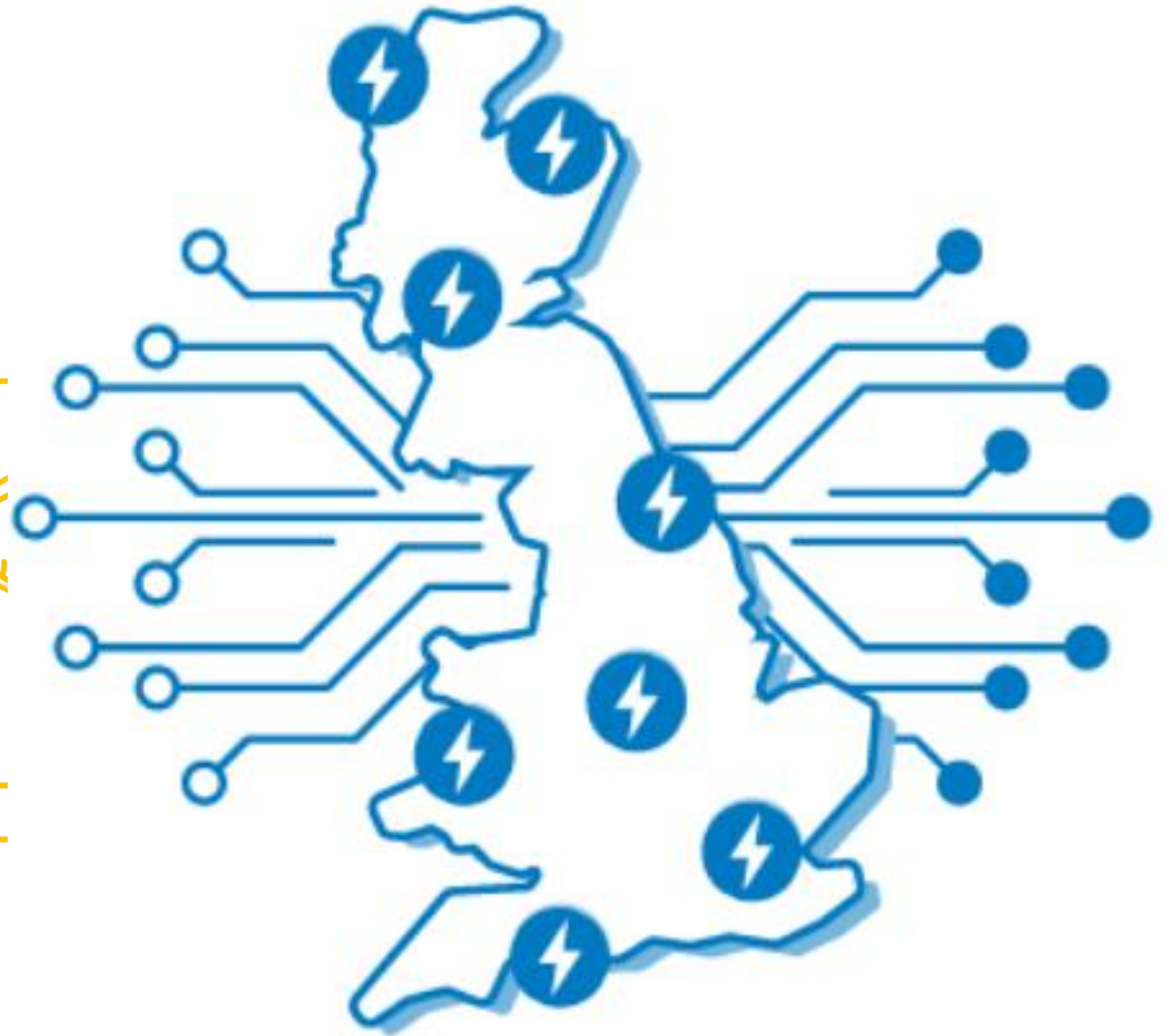
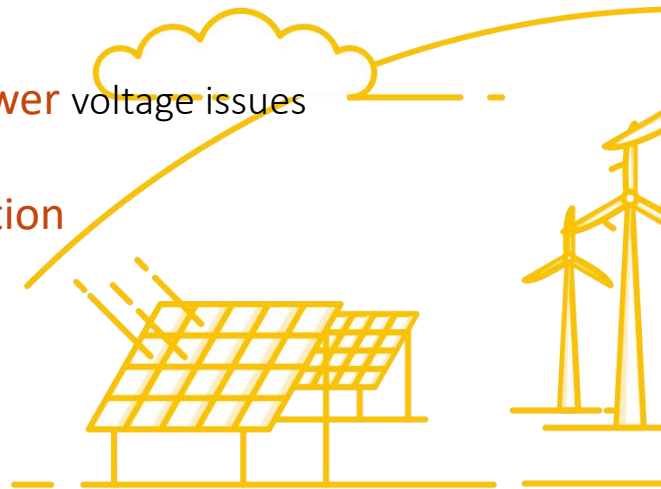
Inertia Decline with inverter-based generation

Low Short circuit level

Dynamic reactive power voltage issues

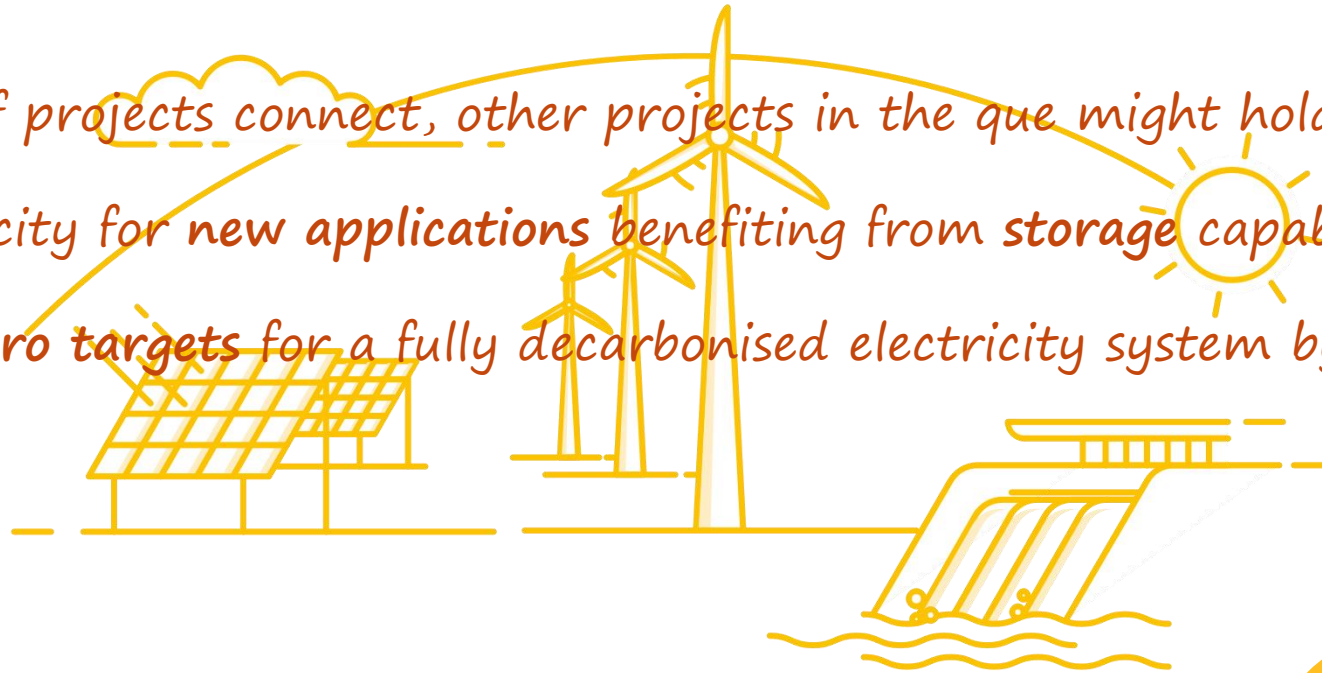
Loss of mains protection

Fault ride through



Why there is an initiative to accelerate connection applications?

- Extensive number of applications to connect to the electricity transmission system.
- Only 30-40% of projects connect, other projects in the queue might hold back
- Freeing up capacity for new applications benefiting from storage capabilities
- Achieving net zero targets for a fully decarbonised electricity system by 2035





Solutions - ESO's five-point plan

- **Transmission Entry Capacity Amnesty** - over 8GW interest
- **Background Modelling Assumptions** - update construction planning assumptions
- **Treatment of Storage** - impact of batteries
- **Queue Management** - new contractual terms
- **Interim offer for Battery Energy Storage Systems** to benefit from flexibility of the assets

Accelerating Energy Storage Connections



- 34% of the current projects in the connections queue are storage projects
- Storage can support the operability needs of the system during times of stress
- Improves understanding of storage behaviours in multiple operating scenarios
- Non firm connections by ensuring efficient system operation
- Intact system conditions- when it is windy and storage is contributing to the local constraints, storage might be called out of operation – to free up transmission system capacity & accelerate the connection of storage providers

Future Outlook

decentralisation, digitalisation,
decarbonisation



Connection
application growth



Innovation for
achieving net zero
operations



Zero Carbon
Operability



Stakeholder
engagement
Government, DESNZ,
TOs, DSOs,

⁴ Accelerating the transition to a flexible, low carbon energy system ESO RIIO-2 Business Plan 2023–2025 31 August 2022 <https://www.nationalgrideso.com/document/266156/download>

Thank You!

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