



Electricity System Operator

Operate the electricity system

As the Electricity System Operator for GB, we move electricity **safely, reliably and efficiently** through the system.

We don't generate or sell electricity and we are not responsible for the infrastructure, for example the pylons and cables, needed to move electricity around.

We balance the system in real time ensuring that supply and demand is always met - operating 24/7, 365 days a year.

We have a legal responsibility to operate the system in a **cost-effective and efficient manner**.



Plan the electricity transmission network

The ESO are also responsible for **high-level** electricity network planning.

The process involves ESO forecasting future energy and system need and usually, **Transmission Owners submitting options** to meet that need.

We then **independently assess** these using the below 4 design objectives:



Economic and efficient



Deliverable and operable



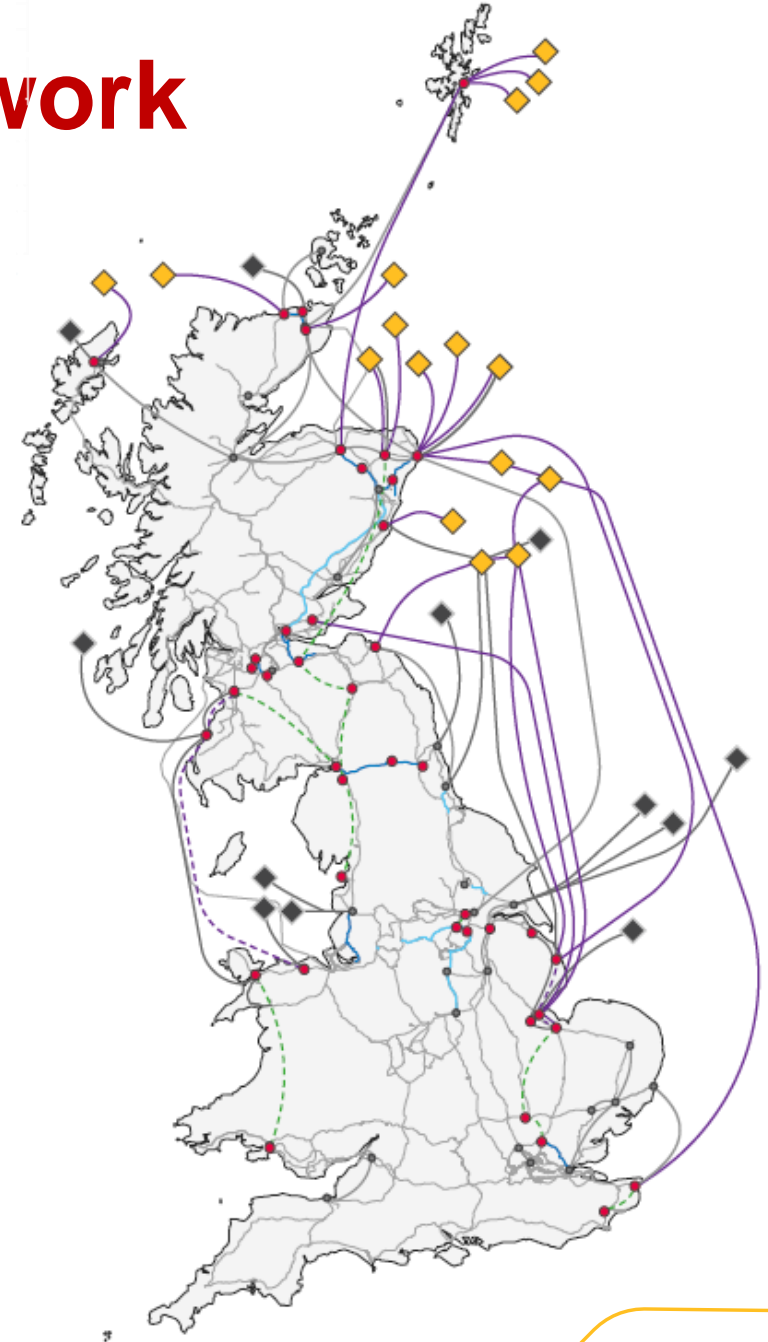
Environmental impact



Community impact

A **GB-wide recommendation** is provided back to Government, Ofgem and industry.

For example, the ESO recently recommended an **additional £58 billion** worth of direct investment into the electricity network, as shown in this map.

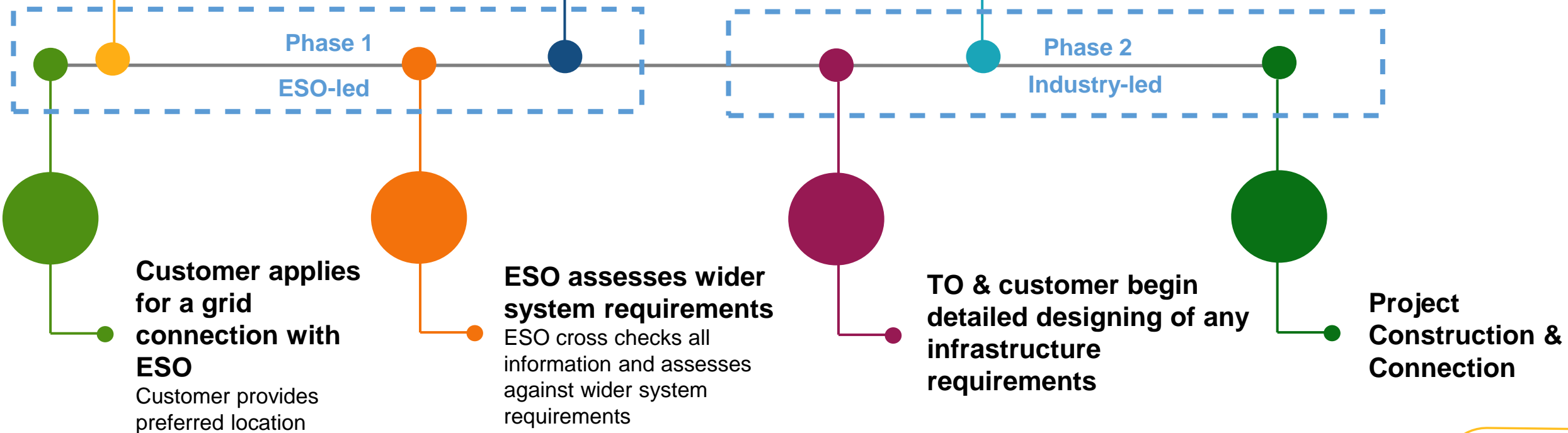


Coordinate the grid connection process

Transmission Owner (TO) assesses network requirements
TO decides what needs to be built to facilitate grid connection

Grid offer provided to customer
ESO monitors project progression, new powers to remove grid connection if not progressing

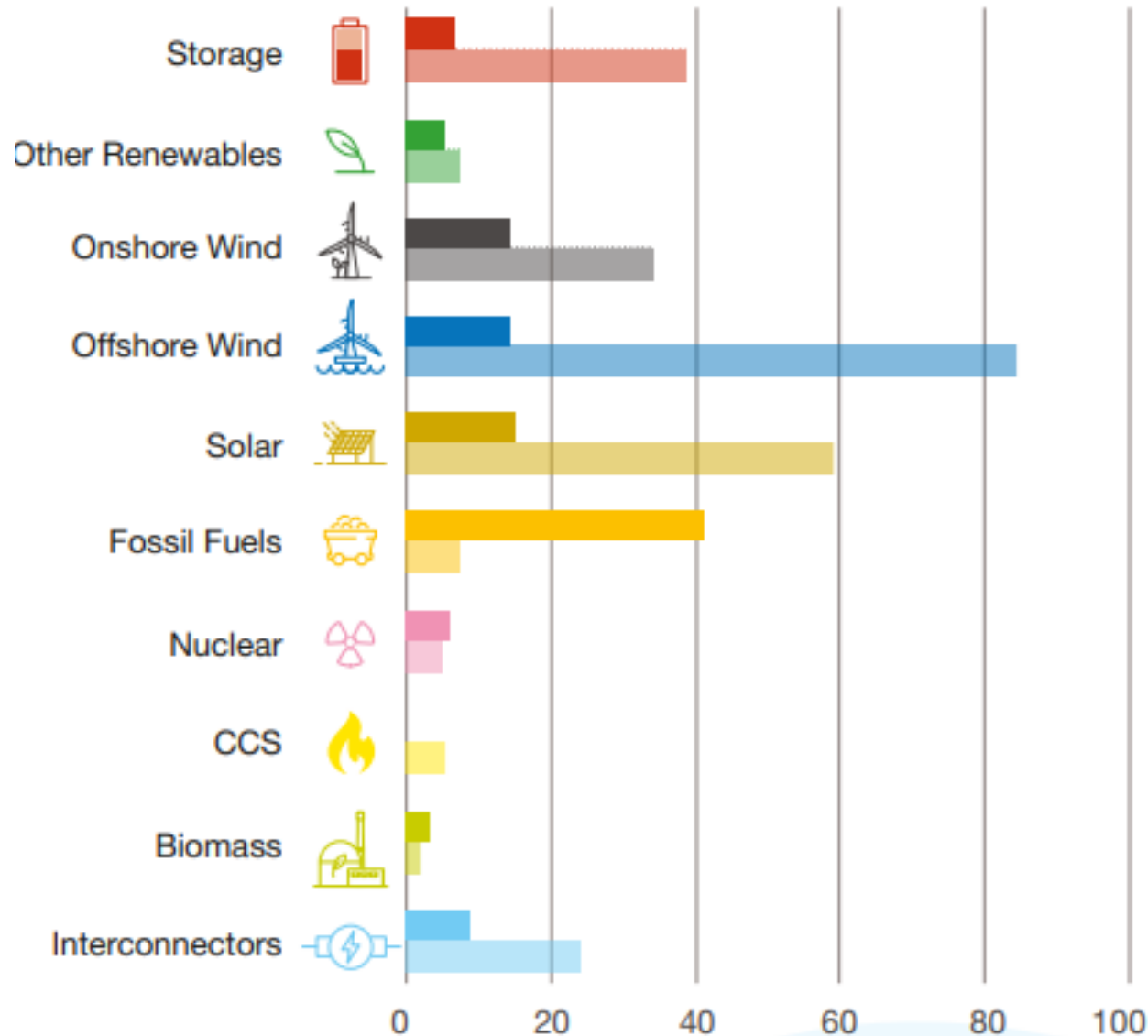
Planning & consenting processes
Customer & TO take their projects through planning & consenting processes (usually NSIPs)



An energy sector in transition

A landscape photograph of a field at dusk or dawn. The sky is dark with a faint light source. In the foreground, there are several bright, glowing green lines that curve across the field, suggesting energy or a transition. The field is a mix of green and brown, with a path visible on the right side. The background shows a line of trees under a dark sky.

Energy system transitioning at pace



Generation mix as of 2023 and our future forecast mix by 2035

Britain's energy demand is set to rise by up to **67% by 2035**.

Our energy system is undergoing a **once in a generation transformation**.

Energy is not only being produced by traditional power plants but now in different locations across the country and of varying outputs.

This transformation means the ESO, Government and Ofgem need to reform how we **plan and connect** businesses to the network.

We are reforming ourselves and our processes to equip ourselves for this change.

Transforming ourselves – *National Energy System Operator*

New Responsibilities	
STRATEGIC PLANNING	 Provide whole system view of the energy sector
RESILIENCE	 Coordinate emergency response
SECURITY OF SUPPLY	 Enable security of supply across GB's whole energy system
ADVISER TO GOVERNMENT	 Advisory UK Government on energy policy



Strategic planning

We will **coordinate system design across the whole energy industry** so planning and investment decisions can be optimised to deliver GB's net zero objectives at the lowest sustainable cost to consumers.

Transforming strategic energy planning processes

Strategic Energy Planning – Regional and national energy planning



Centralised Strategic Network Planning

Using inputs from the of the strategic spatial energy plan,

Will set out the required energy network needed out to 2050,

Across electricity, gas and hydrogen systems.



Strategic Spatial Energy Planning

Expected to be commissioned by UK Government to undertake this function.

We will recommend what different types of large-scale energy generation and storage needs to be built, where and when to Government.

Across electricity and hydrogen in 1st version.

Assessed on a regional zones basis.



Regional Energy Strategic Planning

Using inputs from the of the strategic spatial energy plan,

Will set out regional energy plans that will inform distribution network price controls developed with local stakeholders

Regional plans join up local energy plans with national plans.

Coordinated data, assumptions and regional engagement

And transforming the grid connection process

Reforms



Recommendations to industry on optimal places to locate

Raising barriers to receiving a confirmed offer

Powers to terminate projects that aren't progressing

creating a coordinated regional network design to facilitate connections

