

# Whole Energy System Planning explained

Great Britain's energy system provides a strong, secure, and reliable foundation for our society and economy. It powers and heats schools, hospitals and businesses and supports many other services – such as transport, agriculture, construction and finance.

**Our energy system is changing fast.** We now see more electric heating and transport, growing renewable electricity and rising need for flexible and reliable energy. These changes mean **energy decisions are more connected than ever**; what happens in one part of the system affects the rest.

## What whole energy means

Whole energy means looking at how different parts of Great Britain's energy system work together. That includes **electricity, gas, and future fuels such as hydrogen**.

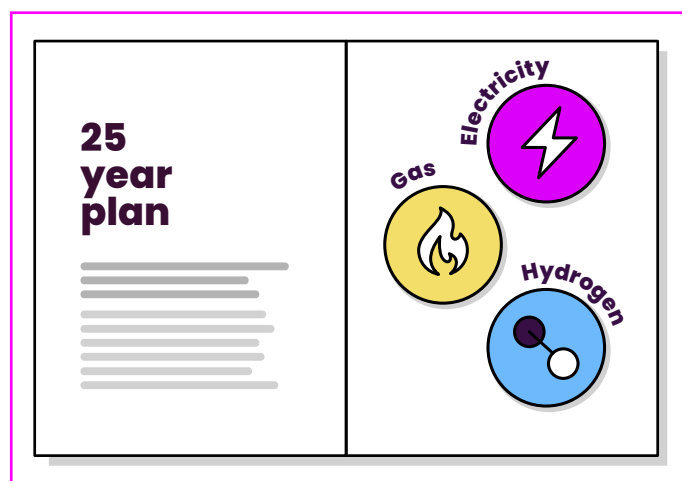
At NESO, we plan across the whole energy system. We're the first organisation in Great Britain to do this. There's a big focus on electricity, gas and hydrogen, as these parts of the system get more connected – decisions in one area strongly affect the others.

We work with and advise governments, Ofgem and industry. And the plans we make today will **shape GB's energy system for decades**.

## Energy transmission and distribution networks

In GB, we transport energy through two networks. Overhead and underground cables transport electricity, and underground pipes transport natural gas.

- The gas and electricity **transmission networks** are like energy motorways. They carry energy long distances from where it's produced, to where it's needed.
- **Distribution networks** are like A, B and C roads that bring energy to our front doors. Distribution networks transport energy from the national transmission systems around our regions to homes and businesses.



## Where the networks meet

Transmission networks use high-voltage electricity and high-pressure gas. But that is not suitable for most energy customers, who connect to the low-voltage and low-pressure distribution networks.

Where the transmission and distribution networks meet, they convert energy to lower levels, safe for people to use. The distribution networks then deliver the energy to customers.

# Why whole energy planning matters

Energy choices are linked. For example:

- Switching to electric heating increases demand on electricity networks
- Using hydrogen changes how gas networks are used
- Knowing which industries may use hydrogen in the future will affect where it's needed
- Where demand grows affects where GB needs new infrastructure – such as pylons, cables and pipes.

People must make hard choices about how and when they reduce their carbon impact. Those choices affect what infrastructure we will need. Without a whole energy view, there is a risk of:

- A less reliable supply for customers
- Wasted or repeated spending
- Higher energy system costs.

Whole energy planning helps avoid these risks.

## Whole energy in practice

Whole energy planning looks at relationships and trade-offs, such as:

- Checking how different **heating options** affect our electricity and gas networks
- Using storage and **flexible demand** to reduce the need for cables, pipes, and pylons
- Planning networks around **where energy demand is growing** – not just how much.

These relationships are key to help us build an efficient energy system.

## Whole energy planning benefits

Whole energy planning helps us to:

- Lower long-term costs, which helps **keep energy bills down**
- Achieve a **more reliable energy system**
- **Reduce emissions** more effectively
- Make smarter investment decisions **and avoid waste**.



## Your views count

Stakeholder input is vital to whole energy planning. We want to make sure that our plans are visible and give people across GB the chance to shape our work at every step.

We will also:

- Continue to seek input from stakeholders, especially industry and environmental
- Seek input from stakeholders who could get involved in our whole energy plans, including the **Centralised Strategic Network Plan** and **Regional Energy Strategic Plans**
- Consult on our draft whole energy plans and environmental assessments
- Continue to raise awareness of our work across regions and nations.

## Any questions? Contact us

We hope you find this factsheet useful. If you have any questions, please contact our team.

Visit our website

[neso.energy/network-planning](https://neso.energy/network-planning)

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