

# Understanding the grid and the benefits of onsite energy generation.



Electricity demand in 2021 was approximately **334 TWh**, which strains the already overburdened National Grid.

That is equivalent to powering **1.8 billion** desktop screens per year

## What is National Grid Electricity Transmission and how does it work?

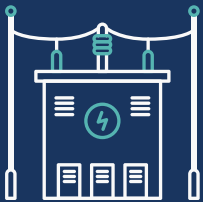
It's Britain's most critical infrastructure as the nation's Electricity System Operator (ESO). The grid ensures that electricity is transported safely, securely and reliably from UK power sources to transmission networks before it is moved on to regional District Network Operators (DNOs).



Over **4,470** miles of overhead cables



Around **90,000** pylons



**330** substations



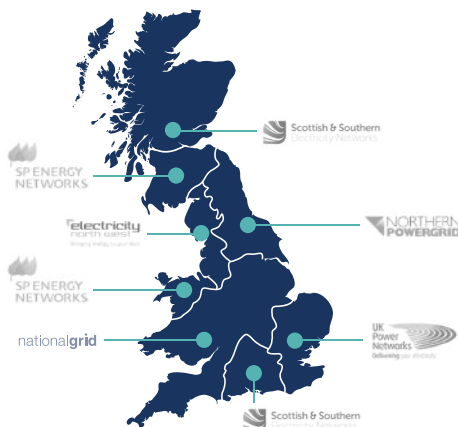
Over **870** miles of underground cables

## National Grid Electricity Transmission control centre - balancing supply and demand.

The UK's electricity supply is controlled here, moving power from where it's made to where it's needed, every second of every day. Power system engineers are responsible for maintaining the grid's correct

**50Hz frequency**. A deviation of just **1%** above or below could cause damage.

As supply and demand fluctuate throughout a typical day, this impacts frequency. If there's more demand than supply, frequency will fall. If supply is higher than demand, frequency will rise. Other factors such as faulty power lines and extreme weather conditions can also affect frequency.



## Transporting electricity from the National Grid to businesses and homes.

**Distribution Network Operators (DNOs)** run the UK's regional electricity distribution networks that connect the high voltage transmission system, operated by the Grid, to businesses. 6 DNOs cover **14 geographically defined regions within the UK**. These are responsible for new grid connection enquiries, as well as maintenance of their network and security of supply. [Find your local DNO here.](#)

### SOURCES

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1094628/DUKES\\_2022\\_Chapter\\_5.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1094628/DUKES_2022_Chapter_5.pdf)

<https://www.nationalgrid.com/national-grid-energise-worlds-first-t-pylons>

<https://www.nationalgrid.com/electricity-transmission/document/119636/download>

## Independent DNOs

IDNOs operate in **smaller** networks **without regional restrictions**. IDNOs can be a more beneficial route for a business wanting a grid connection as they'll receive an **Asset Adoption Value** for any existing electrical distribution assets, which can reduce the cost of connecting to the grid. IDNOs are generally more flexible, affordable and responsive to customer demands.



## Types of grid connection offers?

To connect to the grid, you will need a connection offer, which sets out the works to be undertaken and the cost of delivering those works. There are two types of connection offers:

**30 days**  
avg. wait time

### Budget estimate offers

The DNO provides you with an estimated cost of a grid connection at not cost. However, this is not a formal agreement as it won't involve a detailed analysis just yet.

**90 days**  
avg. wait time

### Formal connection offers

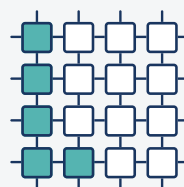
The DNO will carry out a full analysis and give a formal quote, which YLEM Energy can accept on your behalf. Once accepted, it will be a binding contract. Formal offers can often be subject to SoWs and come with a cost.

### Statement of Works (SoW)

Due to the cumulative impact of connecting large volumes of new generation to DNO networks, applications are often subject to a transmission level assessment, by the National Grid, known as Statement of Works. These can be costly, typically a percentage of the connection fee.

### A growing connections queue

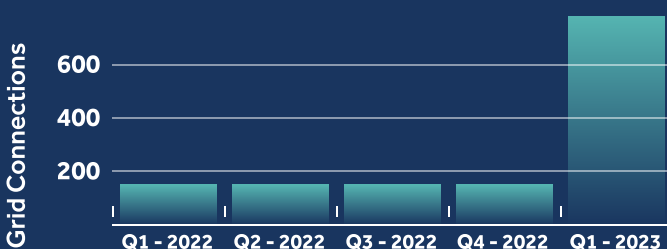
For businesses seeking a connection to the grid in England and Wales, the queue currently comprises



**176GW** new generation

**64GW** connect capacity

\*Accurate as of 12/04/23



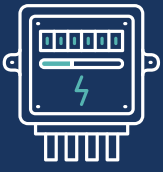
In England and Wales alone, the grid is receiving **600 connection applications per year**. For context, the number of connection offers sent out to businesses in the first quarter of 2023 exceeds the total volume sent out in 2022.

## SOURCES

<https://www.nationalgrid.com/electricity-transmission/queue-management-next-step-accelerating-grid-connections>

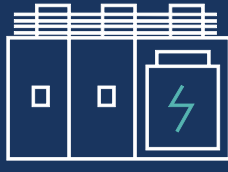
## Why do I need a grid connection if I'm not planning to export any power?

All energy generation projects throughout the UK, regardless of exporting power, need to be connected in parallel to the grid. A grid connection is needed for legislation compliancy for all forms of onsite generation.



### Net metering

This allows you to receive credit for any excess electricity you generate and feed into the grid.



### Backup power

If the renewable energy system doesn't generate enough power, you will need a backup.



### Future proofing

If you don't plan to export any power now, you may want too in future.

## THE BENEFITS OF ONSITE ENERGY GENERATION

A recent study has found that businesses across the UK could be missing out on a collective **£12billion** in annual energy savings by not generating onsite energy.

## What has YLEM Energy achieved?

# 30 Years

Globally generating onsite power



# Over 600

generation projects funded by

# YLEM Energy



# £300,000,000

worth of energy generation assets entirely funded by YLEM Energy

## Save up to 30% on your annual electricity bill

On average, YLEM Energy has saved large power intensive businesses **£227K** on their energy bills annually across many industries ranging from manufacturing to pharmaceuticals.

# 25 Years

potential savings

# 0 Costs

CAPEX or OPEX

YLEM Energy's generation solutions result in **cost savings on annual bills.**

### SOURCES

<https://www.edie.net/businesses-missing-out-on-12bn-onsite-solar-energy-savings/>

# Minimise your carbon footprint



A recent survey found that **1 in 3 UK businesses** are generating their own onsite energy with the most popular renewable being solar power. As the UK's drives toward a net zero future, generating your own onsite energy can significantly reduce your carbon emissions.

YLEM Energy's onsite generation solutions have collectively saved businesses over **1.1 million tonnes of CO<sub>2</sub>** to date. That's a carbon footprint saving equivalent to a large petrol car driving around the circumference of the earth...

# 16,000 x



## EXPORT SURPLUS ENERGY TO ACHIEVE EVEN BIGGER SAVINGS

The market size of the solar PV industry in the **UK has grown by 18.3% per year** on average between 2018 and 2023. This is **expected to increase by 52.9% in 2023**.

By maximising unused roof or land space for an onsite solar project, and generating more power than you need, can achieve you bigger savings on your energy bill.

**81%** of UK businesses generating onsite renewable energy plan to **increase capacity over the next 5 years**.

Alternatively, if your business has multiple UK sites, **YLEM Energy can transfer any excess energy** that is not consumed at your site **to one or more other locations**.

## Find out more about the benefits of onsite energy generation

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**YLEMENERGY.COM**

### SOURCES

<https://www.alphr.com/energy/1010075/third-of-uk-businesses-generating-renewable-energy/>

<https://emsmastery.com/2022/07/15/what-is-1-ton-of-carbon-dioxide-and-how-it-relates-to-daily-life/amp/>

<https://www.ibisworld.com/united-kingdom/market-size/solar-panel-installation/>

<https://www.edie.net/onsite-generation-uk-businesses-primed-to-become-power-plants-of-the-future/>

