

# AN EXPLORATION OF SOLAR AND ITS COMMERCIAL VALUE

**ENGINEERING A GREENER TOMORROW**

→ PRESENTATION

24/7 SERVICE &  
MAINTENANCE

HVAC  
ELECTRICAL  
PROJECTS

MECHANICAL &  
ELECTRICAL OFF-SITE  
FABRICATIONS



Engineering Today for a  
Greener Tomorrow



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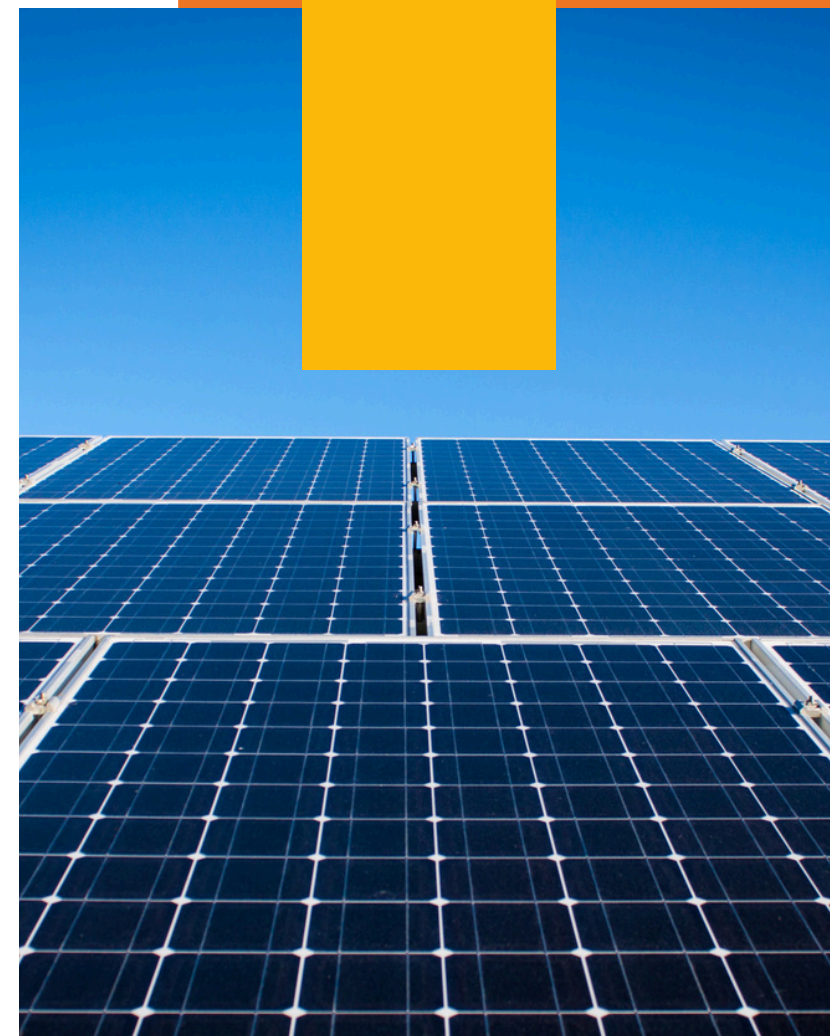
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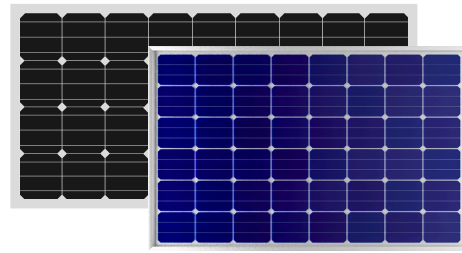
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# HOW SOLAR WORKS

**Solar power** is the conversion of energy from sunlight into electricity. Photovoltaic cells convert light into an electric current using the photovoltaic effect. Photons (pieces of light energy) hit the solar cell and knock electrons (units of electricity) out of place, generating a current which is then directed through the panel, out and into an inverter. An inverter's job is to take the energy from the solar in DC and convert it into AC energy, safe for use in homes and businesses.



# MAIN TECHNOLOGIES



There are two types of solar panels – monocrystalline and polycrystalline- with mono superior. Monocrystalline panels are grown as a single silicon crystal rather than multiple cuts.

Solar panels are usually connected in series. Still, in the case of systems that suffer from intermittent shading, they may be optimized – connected in parallel, each with their own terminal connection and individual voltage.

They feed power into inverters – equipment that takes power in Direct Current (DC) and turn it to Alternating Current (AC)

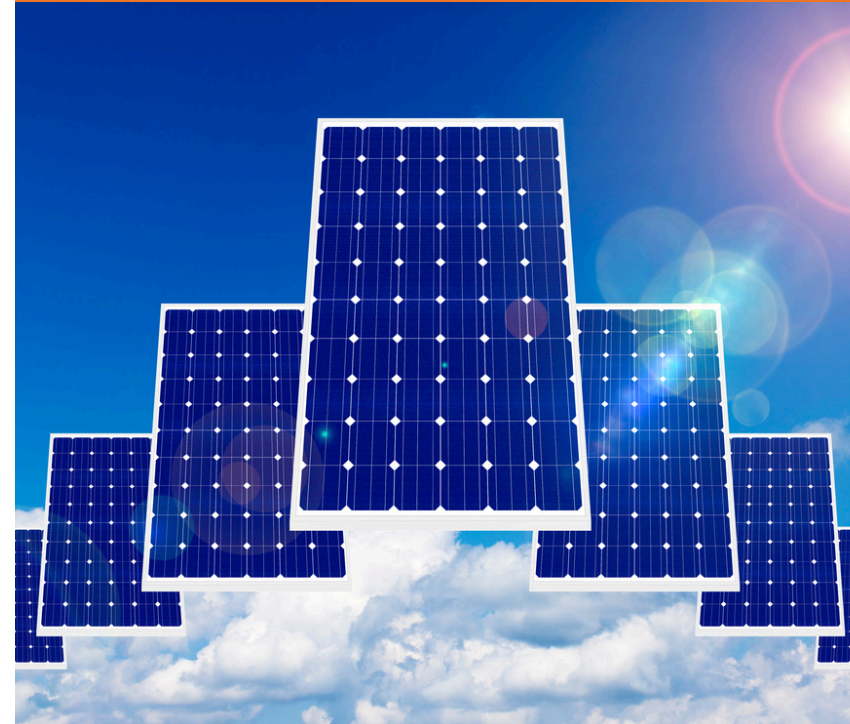
# DEVELOPMENT & DEPLOYMENT

Solar had a large boom in the 2010s due to the feed-in-tariff. This was a way in which homeowners could sell their energy to the grid at inflated rates. This was quickly canceled due to oversubscription.


Then followed a real low in solar installations in the UK from 2016-2019



Exposure to market forces such as COVID-19 and more importantly the Ukraine war caused energy prices to increase hugely.



This coupled with rapidly dropping panel prices has caused a great resurgence in solar,



with commercial sites in particular aiming to achieve their net zero targets and make profits quickly on the tech.

# ECONOMICS

Solar Panels mainly generate revenue through energy savings – every kW used is one not purchased from the provider.

They also generate excess energy not used by the end user, which would then be sold into the grid under SEG- the Smart Export Guarantee. This is normally at a reduced rate circa 7-11pence.

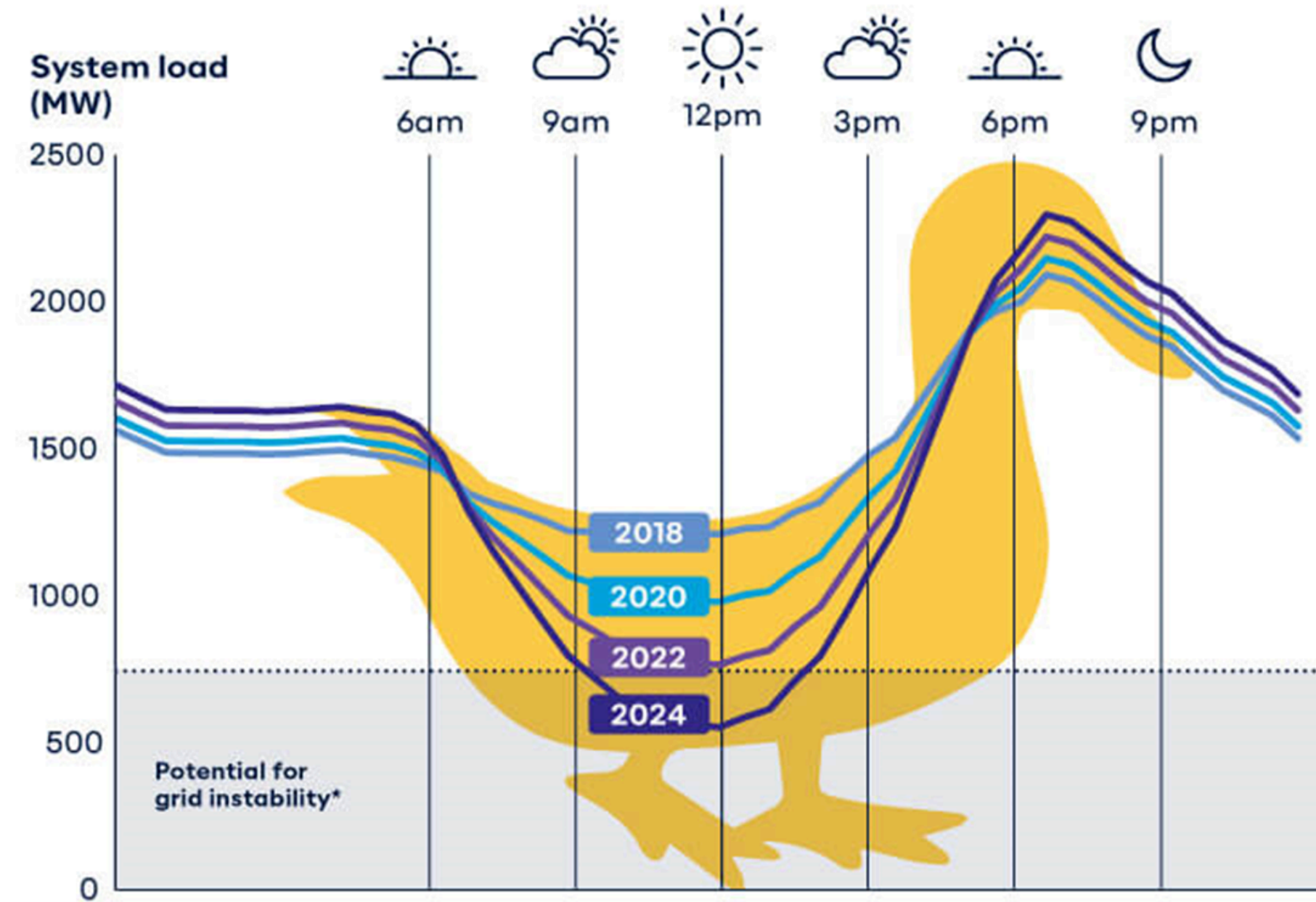
Some systems are fitted on a finance deal, matching the monthly repayments to the savings to create a cashflow-neutral installation

Others are fitted as part of a PPA – Power Purchase Agreement. These systems are free to the end user, who instead agrees to pay for the energy generated. This money is paid to the PPA provider, usually investors

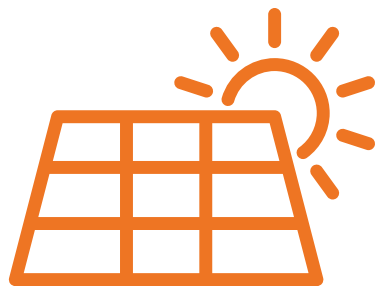
# GRID INTERGRATION

PV systems have a considerable impact on the national grid. They put stress on the grid during the day, oversupplying energy if the weather is more sunny than expected, and then producing no energy at night.

**The effect of this is known as the 'duck curve'.**



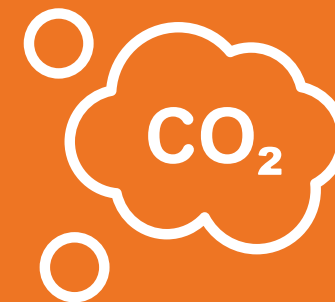
# ENVIRONMENTAL IMPACTS



Solar systems have the second lowest carbon footprint of any renewable tech after wind and require the lowest amount of maintenance when installed correctly.



Increasingly, solar manufacturers are moving away from unethically sourced labour and allowing auditors into their facilities to prove that they are running a positive work environment.



A 75kW system could save 15 tonnes of CO2 per year – 90 mature trees per year or 2,250 over 25 years.



Most solar cells use no rare earth metals. Just silicon, with some common metals (usually aluminium, steel, copper) in the inverter.



# THANK YOU

**ANY QUESTIONS, GET IN CONTACT**

# CONTACT US



**Address**

B-engineering Group, Dallam  
Court Dallam Lane Warrington  
WA2 7LT



**Contact**

[hello@b-enggroup.co.uk](mailto:hello@b-enggroup.co.uk)  
TEL: 01925 551516



**Digital**

[/b-engineering-group](#)  
[www.b-enggroup.co.uk](http://www.b-enggroup.co.uk)

For any enquiries or consultations regarding our HVAC services, please feel free to contact us at your convenience.

We are here to assist you!