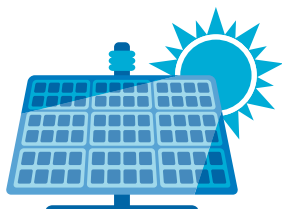




3 FACTSHEET

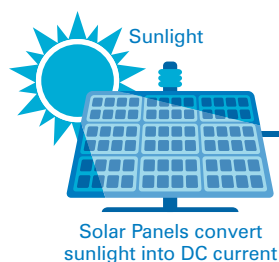
SOLAR ENERGY



SOLAR PANELS

Solar panels also known as PhotoVoltaic (PV) panels generate electricity from daylight. PV works by changing photons of light into electrons using a silicone-based material. PV panels do not need direct sunlight for them to work. They only need daylight. The more daylight they are exposed to, the more electricity they produce.

PV panels are relatively straight forward to install and require very little maintenance. Their price has also dropped significantly in the last decade and are now a cost-effective renewable energy solution. A typical PV installation could save up to 69% off the homeowner's energy bills depending on site specifics.



DC CURRENT



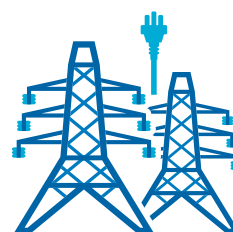
The Inverter converts DC current into AC current

AC CURRENT

AC CURRENT



Home Consumption



Extra Current transferred to the grid

How Solar Panels Work





For a typical 4kW domestic PV installation:



**Average
installed
cost £7,200¹**



**64,000kWh
generation
in 20 years²**



**Save 898kg
of CO₂/year
emissions³**



**Equivalent
of planting
90 pine trees⁴**

*A typical domestic solar installation of 4kW could, on average, produce 3,200 kWh a year.
Most solar panel manufacturers provide a 20-year guarantee, showing that the industry has matured.
This means a 4kW array could produce as much as 60,000 kWh within its lifetime.*

In domestic settings it is more common for PV to be installed in roof-arrays rather than ground mounted solar installations. A roof-array installation sits on top or within the dwellings roof structure whilst ground mounted arrays are installed on freestanding structures on the ground. A good example of an in-roof PV array installation, where your tiles are removed and replaced by the solar panels can be seen in picture 1.

It is best to install a PV array in un-shaded areas. In the Northern Hemisphere PV arrays should be South Facing to optimise their yearly power output. Solar panels generate Direct Current (DC) electrical power and require an inverter to convert this into a usable form. The inverter will convert the DC power into Alternative Current (AC) power that can be used in the home or supply the mains grid in grid connected installations.



REFERENCES

- ¹ <https://www.gov.uk/government/statistics/solar-pv-cost-data-201819>
- ² <https://mcs-certified.com/wp-content/uploads/2019/08/Irradiance-Datasets.xlsx>
- ³ <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>
- ⁴ <https://www.gotreequotes.com/how-much-co2-do-trees-absorb/>



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2014-2020

