



the Environment Centre (tec) Solar Photovoltaic Panels

What are Solar Photovoltaic Panels?

Solar photovoltaic (PV) technology uses energy from the sun to create electricity to run appliances and lighting. PV requires only daylight - not direct sunlight - to generate electricity. PV systems use cells to convert solar radiation into electricity.

How do they work?

The PV cell consists of one or two layers of a semi conducting material, usually silicon. When light shines on the cell it creates an electric field across the layers, causing electricity to flow. The greater the intensity of the light, the greater the flow of electricity. The electrical output from a single cell is small, so multiple cells are connected together and encapsulated (usually behind glass) to form a module (sometimes referred to as a "panel"). The PV module is the principle building block of a PV system and any number of modules can be connected together to give the desired electrical output.

The electricity is generated in the form of direct current (DC) which can either be used directly or converted into alternating current (AC) for household use or for exporting to the national grid. Where there is no mains supply, PV systems can be used to charge batteries.

What are the costs and savings?*

A 4kW system would save you approximately £65 per year on your electricity bill. PV systems are eligible for the Feed-in Tariff (FIT).

Typical System Size (kW)	Approximate Roof Space (m ²)	Estimated Installation Cost (£)	Carbon Dioxide Savings (kg CO ₂ per year)
1kW	8m ²	£2,500 - £3,000	400kg
2kW	14m ²	£3,000 - £5,000	800kg
3kW	21m ²	£5,000 - £6,000	1,200kg
4kW	28m ²	£6,000 - £8,000	1,600kg



Source:

*The Eco Experts, 2016

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