

Getting the best from your solar PV panels

How to make it pay while the sun shines

If your home has solar panels – installed by you or your landlord, or through a ‘rent-a-roof’ scheme – you may need to re-think the way you consume electricity in order to reap the greatest benefit.

This is to ensure that you are making the most of the free electricity that the solar panels are generating. It may mean you need to change your routines and plan ahead, for example using your washing machine or dishwasher during the day rather than in the evening.

Solar photovoltaic (or PV) panels convert the energy in sunlight into electricity, and this is effectively free electricity that can be used in your house (once the cost of installing the panels has been taken into account, of course). Surplus electricity is exported to the grid.

However, there will be times when you’re using more electricity than the panels are producing, such as on overcast days or on dark evenings. At these times the extra electricity will be imported from the national grid, as it was before you had the panels, and you will be charged for it by your energy supplier at the normal rate.

A typical household array of solar panels is rated at around 3000 Watts (3000W or 3 kilowatts). This means that while the sun is shining on them they will produce around 3000W of electricity as long as the panels face more or less south and are tilted at the right angle to receive the most sunlight, and that the panels aren’t shaded by a tree, building etc. On a cloudy afternoon in December, of course, that output might be nearer to 200W.

Solar panels: use them wisely to make them pay



In order to know how to make best use of this energy, you need to have an idea of how much electricity different appliances use. Let’s look at some typical power ratings (see our leaflet What uses Watt for more):

Low energy light bulb: 15W

Fridge: 100W

Laptop: 150W

Microwave: 750W

Washing machine: 2500W (2.5kW)

And let’s assume your solar panels are generating a steady 1000W (1kW). Of this, 100W will be used by the fridge (though not continuously since it switches itself on and off during the day) which leaves 900W for other appliances. So based on the ratings above you could use your 750W microwave for free and still have 150W available to run lower power appliances, such as lights. Obviously, you can’t run a 2500W washing machine with only 900W, so you’d pay for the extra 1600W that you need and that the solar panels can’t generate.

It follows that you should stagger the use of high-wattage appliances to make the most of the free electricity available. This might mean waiting for your washing machine to finish before running the dishwasher.

By using appliances when the solar panels are producing lots of electricity you’ll make bigger savings on your bills.



Out during the day?

Households who are home during the day can take easier advantage of the free electricity than those who are only at home mornings and evenings (an average saving of £240 on the bills, compared to £100).

In these situations inbuilt delay-start timers for appliances such as washing machines can be useful, or using a slow-cooker for your evening meal rather than the electric hob.

If you own your home and have the money to invest, you could also explore installing battery storage.

Inverter display

A display on your inverter (circled in the photo below) will inform you how much electricity is being generated. The inverter is there to convert the electricity generated by the solar panels from direct current (DC) into alternating current (AD), a form that your household appliances can use.



If you know how much your appliances use you'll be able to look at your inverter and then choose what you should run in order to make the most of the free electricity being produced. But remember that what you read on your inverter display shows the output at that particular moment in time; this may quickly change according to weather conditions.

It may be worth making a note of the power rating of your appliances (e.g. laptop, 150W; hairdryer, 1300W) and keeping it next to your inverter display to help you make quick decisions about what appliance you want to use.

However, the inverter may be installed in out-of-the-way places like the loft. If this is the case it's worth thinking about buying a solar energy monitor that you can put in a more convenient place. These cost around £75-£100. Some models are straightforward to install but others may need to be fitted by a professional electrician. You can even have your system connected remotely to your computer, allowing you to monitor your panels over time. If you don't own the solar panels, check with whoever does that it is OK for you to fit a monitor.



See our separate Solar PV factsheet for information on purchasing solar panels and the costs involved.

www.cse.org.uk/resources

Tips to help you cut your bills ...

Keep the oven door shut as much as possible; every time you open it, nearly a quarter of the heat escapes.



Give your clothes a day in the sun; and give your tumble drier a break. Clothes dried in the fresh air feel great.

Be a friend to your freezer. Defrost it regularly to help it run more efficiently.

Buying a new appliance? Check the energy label and buy A-rated goods.

Wait until you have a full load before putting on a wash. Two half-loads use more energy (and water) than one full load.



Sleep tight. Make sure all the lights are turned off when you go to bed, or use a low-wattage night light if you do need to leave one on.

Turn your heating down by 1 degree. You'll hardly notice the change in temperature, but it'll make a big difference to your heating bill.

Cup of tea? Only fill the kettle with as much as you'll actually use (but make sure you cover the metal element).



centre for sustainable energy

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The Centre for Sustainable Energy is a national charity that helps people change the way they think and act on energy.

Our Home Energy Team offers free advice on domestic energy use to householders in Bristol, Somerset, Wiltshire, South Gloucestershire and Dorset.

