

**Sustainability**



# How to get the most from your solar photovoltaic (PV) system (Shared Ownership properties)



## Solar photovoltaic energy in your home

As your property has solar panels on the roof you can make use of the free electricity they generate.

The solar photovoltaic (PV) panels generate electricity during daylight hours, with more electricity being generated when the sun is stronger.

### Use them wisely to make them pay...

The electricity produced by your PV panels is not stored and must be used instantaneously for you to save money on your electricity bills. Electricity generated from the PV panels that you do not use will go straight to the grid.

To save more money on your electricity bills think about how you can make the most of this free electricity. You could change your routine or plan ahead so the electricity works for you. You could:

- Use your washing machine, tumble dryer or dishwasher during the day instead of overnight.
- Prepare your evening meal in the morning and place in a slow cooker on low.
- Charge up your electrical appliances during the day.

## How much energy do they generate?



The amount of energy generated by the solar panels varies with the time of day and across the seasons and is dependent on the height of the sun in the sky, its strength and local conditions, such as cloud cover and shade from trees or neighbouring buildings. It also varies between homes depending on the total area of the solar panels and their position.

More electricity will usually be generated in the middle of the day when the sun is at its highest, and more will be generated in the summer, compared to the winter. The following graphs show how the amount of electricity produced varies during the day and with the season.



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**Figure 1: Free electricity generated over a day in summer**

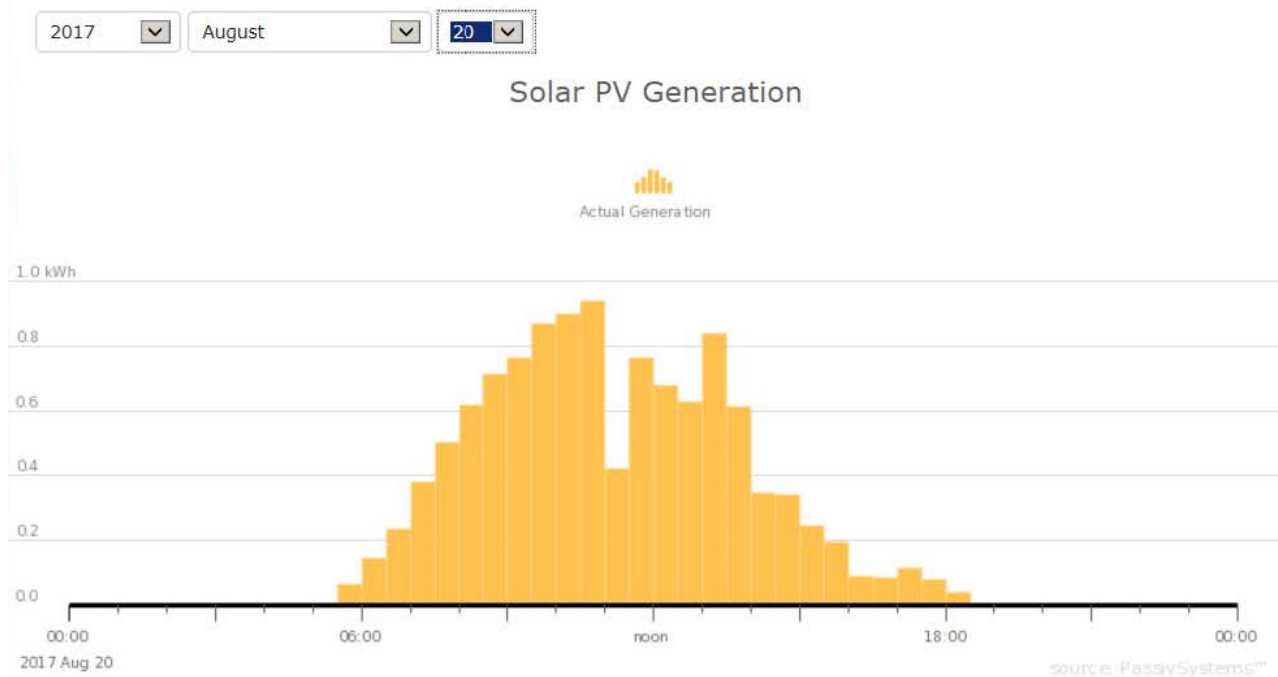


Figure 1 shows that at this example property in the summer the panels produced free electricity between 5.30 am and 6.30 pm. A total of 11.7 kWh was generated on that day, with a peak of 0.94 kWh around 11 am.

**Figure 2: Free electricity generated over a day in winter**

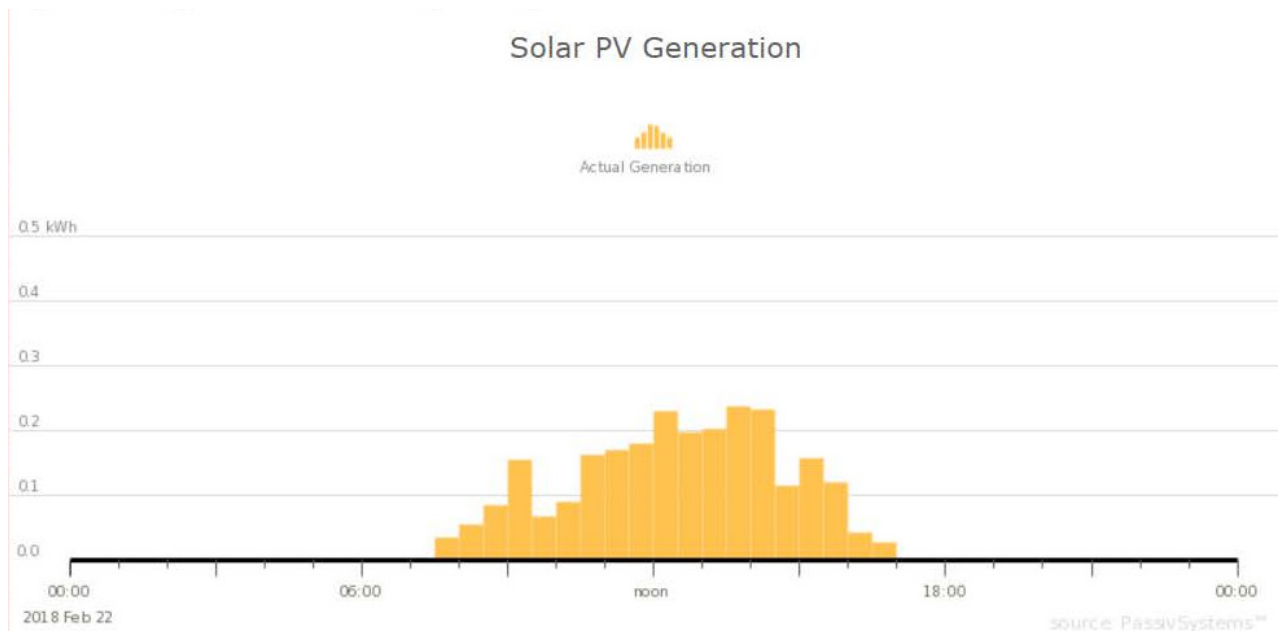


Figure 2 shows that the amount generated in the winter is much lower. In the same property as Figure 1 in February, the panels were generating free electricity from 7.30 am to 5 pm and generated a total of 2.6 kWh on that day, but with a peak of only 0.2 kWh from 12 noon to 2.30 pm.

## How to make the most of this free energy

When the solar PV panels are generating electricity, it goes into the mains electricity for your house. The electricity produced by the PV system will be used first. The PV will provide a base rate of energy and the rest will be provided from the grid.

To make the most of this free energy you should try and time using your electric appliances, such as ironing, vacuuming, or using washing machines and especially tumble driers, if you have one, where safe to do so, during the day when the sun is stronger, typically from 8 am – 5 pm in summer, to 9 am – 3 pm in winter.

The electricity produced by your PV panels will not completely power these appliances but will reduce the amount of electricity you need from the grid and help keep your energy bills lower.

## Example

If the solar panels are generating up to 1kW peak (1000W) some of this energy will be used by appliances continuously plugged in or on standby. At peak generation:

- 100W will be used by the fridge (not continuously as fridges switch themselves on and off according to need), this would leave 900W for other appliances.
- Leaving appliances on standby instead of turning them off at the socket, such as your TV, computer or mobile phone chargers, will use electricity and leave less free electricity for powering other appliances.

As an example, you could use your 750W microwave and still have 150W available to power appliances such as lights. Or, if you wanted to run your washing machine at 40°C (using 2kWh which is 2000W) you'd only have to pay for the extra 1100W.

Figure 3:

### Comparison of free Solar PV and supplier grid electricity used by appliances when peak solar power is being generated in summer

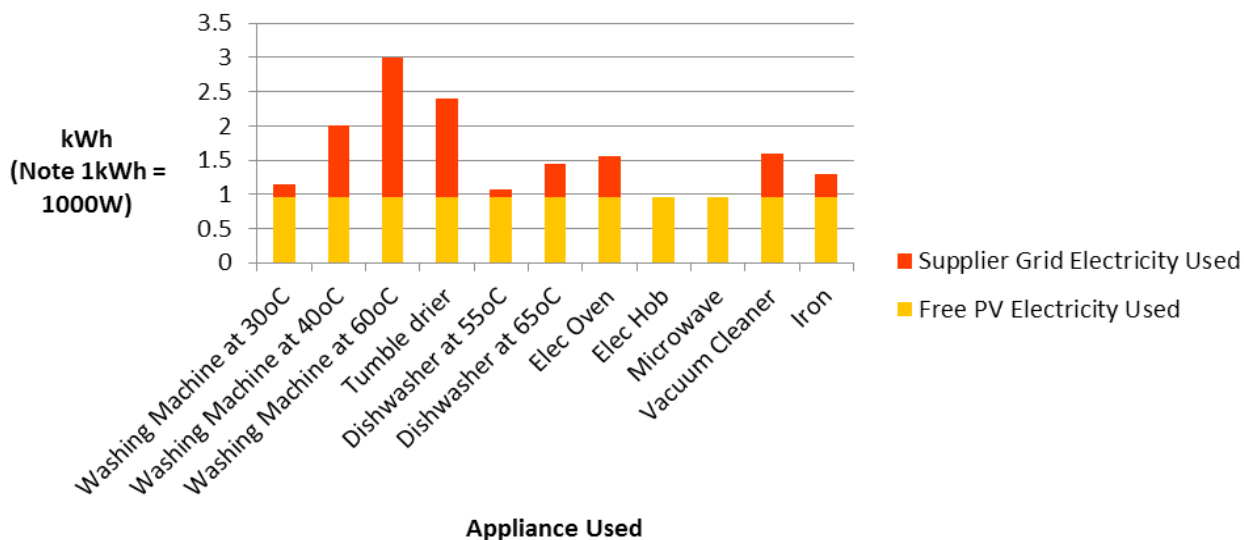


Figure 3 shows some typical power ratings and the amount of the appliance's electricity that could be provided from the free solar PV, compared to that being used from the grid. This example is from the summer when the sun is at its strongest.

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Some appliances could almost be completely powered by the free PV electricity, when the sun is at its strongest (such as washing at 30°C). Remember the higher the temperature setting you run the washing machine at, the more grid electricity will be needed.

When the sun is not as strong and less solar PV is being generated, such as on a cloudy day or in the winter, the amount of electricity an appliance needs from the grid will increase (the red part of the graph will increase and the gold part be less).

It is best to use your appliances one after another instead of all at once to allow more of the electricity used to be powered from the solar PV. For example, wait for your washing machine to finish before running the vacuum cleaner. You could use time clocks to start items such as washing machines, tumble dryers and dishwashers when you are out during the daytime, if it is safe to do so.

If you have a smart meter fitted by your electricity company, the monitor connected to it may show when you are exporting electricity to the national grid. This means you have extra free electricity that you could be using at this time.

## How much could I save?

The solar PV panels can generate approximately 1,000 kilowatt hours (kWh) of electricity a year, but this will vary from home to home. Most households are not able to use all of this energy, due to timing differences between generation and electricity usage.

It is estimated that on average households use about 50% of the solar PV electricity generated, with the actual amount dependent on lifestyle and electricity use behaviour.

Depending on your lifestyle you could use, on average, 500kWh of the solar photovoltaic electricity, meaning you don't have to buy this from your energy provider. Assuming you buy electricity at 15p/kWh from your energy provider, that could be a saving of up to £75 a year.

In an average household, using 3000kWh of electricity a year, this would be a 16% saving on the electricity bill.

Remember these figures can't be guaranteed... they are dependent on how much electricity you use in daylight hours. The more you can alter your lifestyle to have electrical appliances running during daylight, the more you will save on your electricity bills.

## What happens to the rest of the electricity?

The surplus electricity the panels generate that you do not use in your home, is exported to the grid, so it is not wasted and can be used by other properties on the grid. By exporting this electricity, there is less demand on coal burning power stations to generate electricity, meaning less carbon dioxide is produced.

## Meter readings

There is a total generation meter fitted in your home which records the amount of electricity in kilowatt hours (kWh) the system produces.

If you want to see how much electricity your solar panels are producing you can periodically check the solar PV meter. This will either be in the hallway, below the stairs, or in the loft in your property.

Be careful NOT to provide your PV generation meter reading when you give your electricity supplier your electricity meter reading.

You do not need to read your PV meter when you give your electricity supplier your electricity meter reading. The solar PV meter is completely separate from your mains electricity supply.



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# How to check if your PV panels are working

## 1. PV meter check

There will be a red flashing light on your solar PV meter, this indicates the solar panels are generating electricity. The faster the light flashes, the more electricity is being generated.

If the red light is permanently on, this can mean the PV panels are not generating enough to register on the meter. This can happen for several days in winter when there is heavy cloud cover.

If you notice the red light remains on for more than a week, there could be a problem with the panels.

You can also check your solar PV panels are working by checking the solar PV meter reading is going up each day. If this meter reading hasn't changed after a few days, there may be a fault

If the solar PV meter screen is blank it could be that your solar PV panels are switched off. You should check the isolator switch and fuse in the fuse box.

## 2. Isolator switch check



If you can see the AC Isolator switch near the PV meter make sure it is in the 'ON' position.

If you have just moved into your property, or had any electrical work done, the electrician may have turned this to 'OFF' to carry out tests and could have forgotten to return it to the 'ON' position.

The AC Isolator is usually a red dial on a small yellow and white box, usually near your PV generation meter. However, it could be a grey dial, in which case the dial needs to be over the line, not the circle.



The '-' line in ON and the 'O' is off.

## 3. Fuse box check

Locate the main fuse box and check the PV fuse is in the 'ON' position.

## 4. What if I suspect a fault?

If you think the PV panels are not working, contact the solar PV installer named on your MCS certificate.

### Safety first!

**Beware!** Even when the main fuse board for the house is switched off the panels will still generate electricity and the cables to the inverter, usually in the loft, will still be live!

## FAQs

### Do I need to take readings from both electricity meters (electricity meter and PV meter) for my electricity supplier?

No. The solar PV meter is completely separate from your mains electricity supply.

Be careful not to provide your PV generation meter reading when you give your electricity supplier your electricity meter reading.

### Can I switch electricity supplier if I have solar PV on my roof?

Yes. As your solar panels are completely separate from your mains electricity supply, you can switch to any electricity supplier you want.

To see if you can save money by switching tariff or supplier use an Ofgem approved price comparison website.

### Will the PV panels still provide me with electricity if there is a power cut or I run out of credit on my prepayment (pay-as-you-go) meter?

No. If there is no mains electricity supply to your house, the solar panels are unable to provide electricity to use. This applies when there is no credit on a prepayment meter, the mains electricity has been switched off at the fuse box, or there is a power cut.

The way the PV electricity is produced means that the inverter in the loft needs a trace of electricity (electrical resistance) from the grid to make the electricity usable in the home. The inverter changes the current from the panels from direct current (DC) to alternating current (AC) that can be used in the home.

**Please note: Even when the main fuse board for the house is switched off the panels will still generate electricity to the inverter in the loft and the cables will still be live!**

**We are committed to providing equal access to information. If you would like this information in another format, please phone us on 0345 8 507 507.**



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