

Solar PV choosing a site and getting planning permission

As well as the guidelines below, you can try our [Renewables Selector](#) to see if your home is suitable for solar PV, and if it's not, find other possibilities.

Choosing a site

Orientation and tilt

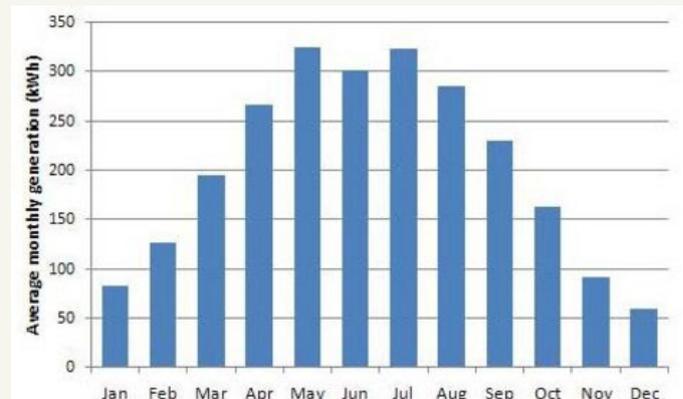
Your roof should ideally face due south at a pitched angle of around 30° from the horizontal to give the best overall annual performance. Installations at any pitch and facing anywhere to the south of due east and due west are feasible, although output and income will be reduced. Installation is not recommended on roofs facing north.

This table shows the percentage of the ideal annual output you will get for a system with a different orientation and tilt:

Tilt degrees	West						South						East												
	90	80	70	60	50	40	30	20	10	0	-	-	-	-	-	-	10	20	30	40	50	60	70	80	90
0	87	88	90	91	92	92	93	93	93	93	93	93	93	93	92	92	91	90	89	87	86	84	81	78	72
10	84	87	90	92	94	95	95	96	96	97	97	96	95	94	93	91	89	87	84	81	78	72	63	56	50
20	82	85	90	93	94	96	97	98	99	99	98	97	96	95	93	91	88	84	81	78	72	63	56	50	44
30	78	83	87	91	93	96	97	98	99	100	98	97	96	95	93	91	89	85	81	78	72	63	56	50	44
40	75	79	84	87	92	94	95	96	96	96	96	95	94	92	90	86	82	77	72	63	56	50	44	38	32
50	70	74	79	83	87	90	91	93	94	94	94	93	91	88	83	80	76	73	70	63	56	50	44	38	32
60	65	69	73	77	80	83	86	87	87	87	87	86	85	82	78	74	71	67	63	56	50	44	38	32	26
70	59	63	66	70	72	75	78	79	79	79	79	79	78	75	72	68	64	61	56	50	44	38	32	26	20
80	50	56	60	64	66	68	69	70	71	72	72	71	70	67	66	60	57	54	50	44	38	32	26	20	14
90	41	49	54	58	59	60	61	61	63	65	65	63	62	59	60	52	50	47	44	38	32	26	20	14	8

Seasonal performance

The chart on the right shows a typical seasonal spread of energy generation for a system of 3kWp facing south. The winter months generate significantly less electricity compared to the summer months.



Site location

The amount of electricity generated by a solar PV system can also vary depending on where you live. Northern areas receive slightly less energy from the sun over the year. For example, a 1kWp system will generate less electricity in Northern Scotland than it would in Cornwall. However, solar electricity is still worthwhile - the differences aren't substantial. You can get an estimate of how much a system will generate in your location (and how much it will earn) using our [Solar Energy Calculator](#).

Shape of roof area

Solar PV arrays are made up of modules of about 1.5 square metres which allows most available roof shapes to be accommodated. Typical UK installations are around 15 to 25 square metres. For example, a 3kWp system could comprise 15 panels taking up an area of 20 square metres and will generate roughly 2,500kWh per annum.

Shading

All the modules are connected, so any shading on a single module will affect the performance of the whole array. A system can tolerate some shading early or late in the day without much reduction of overall output but it should not be shaded between 10am and 4pm. Nearby trees, chimneys, TV aerials and vent pipes are all common causes of shading and should be accounted for before any installation.

Solar electricity doesn't necessarily require direct sunlight and can still generate electricity on cloudy days. You could get as much as a third of the energy on a cloudy day as you would get on a sunny day at the same time of year.

Planning permission

In Scotland, you don't need planning permission for most home solar electricity systems, as long as they're below a certain size - but you should check with your local planning officer, especially if your home is a listed building, or in a conservation area or World Heritage Site: we can only give general guidance here.

Permitted development rights for solar PV (roof mounted)

Permitted unless:

- ✔ installed on any part of the external walls of the building if the building contains a flat
- ✔ panels when installed on a flat roof are situated within 1 metre from the edge of the roof or protrude more than 1 metre above the plane of the roof
- ✔ panels when installed project higher than the highest point of the roof (excluding the chimney)
- ✔ the building is within a conservation area or World Heritage Site and the solar PV or solar thermal equipment is installed on a roof which forms the front of the building and is visible from the road.

The solar PV equipment must, as far as is reasonably practical, minimise its effect on the amenity of the area and be removed when it is no longer needed or used for domestic microgeneration.

The application also needs to be accompanied by a range of other information and a number of other conditions apply. [Download a PDF of the Town and Country Planning \(General Permitted Development\) \(Domestic Microgeneration\) \(Scotland\) Amendment Order 2010 for full details.](#)

Insurance

Many building insurers will cover you under the terms of your current policy if you have solar PV panels installed on the roof of your home. But always contact your current insurance provider for advice before having solar PV panels installed, because:

- ✔ the installation of solar PV panels is a material change to your home's structure that your insurance provider needs to know about
- ✔ you need to know exactly what your insurance covers - does it cover damage caused by the installation; does it cover theft?
- ✔ some types of installation, such as ground-mounted systems, may not be covered as standard.

As a precaution we recommend that you confirm in writing with your insurance provider that you have had a solar PV system installed and ask them to confirm in writing that they have received your notification and the terms of the cover being provided by them. If you purchase a home with a solar PV system already installed or change insurance provider later, make sure that they are aware of system before accepting any quote.