



## MODEL PV PERFORMANCE ESTIMATE

### Predicted System Performance for Solar PV Installations

The UK Microgeneration Certification Scheme (MCS) requires all certified companies to give an assessment of solar PV system performance based on the standard MCS procedure in Microgeneration Installation Standard MIS3002, Issue 3.3<sup>1</sup>.

**The performance of solar PV systems is impossible to predict with certainty due to the variability in the amount of solar radiation (sunlight) from location to location and from year to year. This estimate is based upon the standard MCS procedure and is given as guidance only. It should not be considered as a guarantee of performance.**

In optimal circumstances, a property in Wales with an unshaded south-facing roof sloping at an angle of 35°, a 4 kWp PV system typically generates: - 3688 kWh.

**Your system is predicted to produce 3600 kWh.**

To calculate this, we take:

- the size of your system (in kWp)
- how much solar radiation the system is estimated to get (the 'solar radiation input factor' or Kk for short). We use official tables to estimate this which take into account your postcode region, the inclination (or tilt) of your roof and its orientation (which direction it faces), and
- how much shading there is on the system (the 'shade factor' or SF), such as from surrounding trees, chimneys, shadow from nearby buildings). We have estimated this using the sunpath diagram enclosed.

The calculation we do is:

**kWp (size of system) x Kk (solar radiation input factor) x SF (shade factor)**

<b>A. Installation data</b>	
Installed capacity of PV system	4.0 kWp
Orientation of the PV system – degrees from south	30°
Inclination of system – degrees from horizontal	35°
Postcode region	LL
<b>B. Calculations</b>	
kWh/kWp (Kk) from MCS table Zone 13	900
Shade factor (SF)	1 Clear
Estimated annual output (kWp x Kk x SF)	3600 kWh

## DISCLAIMER

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1. This shade assessment has been undertaken using the standard MCS procedure - it is estimated that this method will yield results within 10% of the actual annual energy yield for most systems

## Getting the most out of your solar PV system

Based on your current bills, your electricity requirement is .... kWh per year. (Compare this to the average UK household which uses 3,300 kWh of electricity each year, according to latest figures available from energy regulator Ofgem.) You will be able to meet some of this requirement in daylight hours with the electricity generated by your solar PV system. The more you can use electricity in the daytime, when the system is generating, the more you can save on the electricity you need to buy from your electricity company.

Even if you are not at home during most of the day, you could put your appliances (such as washing machines and dishwashers) on timers to run during daylight hours.

The average washing machine runs through hundreds of cycles a year and even an energy-efficient one uses at least 1 kWh per cycle (source: Energy Saving Trust). So you could save 100s of kWh off your bill by doing your washing in daylight hours.

Additions to your Microgeneration system, such as a 'Power Diverter' will capture excess generation before the Inverter exports to the grid and diverts energy to a pure resistive load such as an Immersion Heater, potentially increasing electricity savings to 100% of generation as opposed to the assumed 50% in Income/Benefits section following.

## Feed-in Tariff and Payback

**NB To get the full Feed in Tariff (or FiT) your property must have an Energy Performance Certificate rating of band D or above. If your property has a lower rating, you will receive a lower Feed in Tariff.**

All products and installers must be MCS certified for you to qualify for payments under the FiT scheme (read more about FiTs in RECC's consumer guide at [www.recc.org.uk/consumers](http://www.recc.org.uk/consumers). Your system qualifies for FiT payments which are tax-free to domestic consumers.

Under this scheme, you will receive:

**A) Generation** payments from your electricity supplier for every kilowatt hour (kWh) of electricity your system generates, whether you use it or not.<sup>2</sup> Ofgem published Tariff Rate from 16<sup>th</sup> January 2016 is £0.0432 pence.

**B) An 'export payment'** for any of the electricity your system generates that you feed back into the grid. Currently (unless you have a smart meter which can record what you actually export) you will receive this payment on the basis that you export 50% of what you generate (it's 'deemed' to be 50%) at a rate of £0.0491 pence per kWh.

**C) If you use** some of the electricity that your panels generate in daylight hours, you will also **save** on your electricity bill because you will be able to use less electricity from your electricity supplier. (see 'Getting the most out of your PV system', above)

To work out how much you might get, we have estimated how many kWh your system will produce, we have assumed that you will export 50% of this, and that you will use 50% at home. [As the system only generates in daylight hours, you can only use its output in daylight hours. If you are not at home much of the day and/or cannot put appliances on timers to run during the day, you may use a smaller proportion of its output, maybe only 35%].

## BENEFITS

### Income / benefits

Installed system size  
Estimated annual system output using standard MCS procedure

4 kWp  
3600 kWh

A. Feed-in Tariff, calculated at £0.0432 pence x 3600 kWh	£155.52
B. Exported to grid 50% x 3600 kWh x £0.0491 pence	£88.38
C. Electricity savings 50% x 3600 kWh x avg £0.13 pence	£234.00
D. Your total benefit in the first year is estimated at [A + B + C = D]	£477.90

The FIT and the Export tariff are paid for 20 years. They will go up in line with inflation and will be 'up-rated' every April. (Installations taking place between 1 January and 1 April are not uprated until the following April.) Your savings from using some of the electricity generated will also increase if electricity prices rise.

### **Payback**

To estimate how long the system will take to 'pay for itself' ('payback'), we compare what you pay for the system with our estimate of how much you will get and save each year (D above). (We have assumed that there is no inflation and no increase in electricity prices or export tariffs).

Fully installed cost (plus VAT)	£6294.75
System benefit (each year)	£477.90
Return On Investment for 1 <sup>st</sup> Year	7.6 %
Payback (cost / benefit)	13 years

In addition,  
Power Diverter Fitted

Potential to save 100% Electricity x avg £0.13 pence	£234.00
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Potential Total Benefit	£713.34
Install Cost with Diverter	£6744.75
Potential Return On Investment for 1 <sup>st</sup> Year	10.5%
Potential Payback (cost / benefit)	9.4 Years