

Solar PV installations on farm

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Farmers who install renewable energy systems can get returns of up to fifteen per cent on their investment and cut electricity bills in half. For the organic farmer there's an extra benefit; using a technology that is environmentally friendly and reduces their carbon footprint. There can also be a commercial edge as buyers look for environmental commitments from their suppliers. It can be a marketing tool – telling consumers about how your farm's green energy is cutting CO2 emissions.

Solar power is booming across the country, led by the government-backed feed-in-tariff, which applies in England, Scotland and Wales, but not in Northern Ireland. It means power companies have to pay a premium for electricity generated by renewable sources.

Farms are ideal places for solar. They have a lot of land for ground-mounted systems and large buildings for roof-mounted systems. There is often a high energy demand during the day and in the summer, when the panels are at their most productive. That is particularly true for sectors like poultry and dairy farming, or any farm which has a heavy cooling or drying requirement.

So how do the figures stack up?

Installing a 50 kilowatt system will cost around £110,000. Under the feed-in-tariff the farm would receive payments of around £14,000 a year.

The income is guaranteed for 25 years and is index-linked to inflation.

The tariff is paid for generating the electricity, whether the farmer uses it or not. There is a smaller payment for exporting surplus power, but it is more economical to use as much of the power as possible on the farm. That will bring an estimated saving on electricity bills of £4,000 a year.

The feed-in-tariff is expected to be reduced at the end of March next year (2012) and there is a race across the country as farmers and businesses look to install before then.

But how does it work? And what is the best system to go for?

Solar pv panels produce electricity from the sun. It doesn't have to be a sunny day for them to work, they will produce power in almost any daylight conditions. They are at their most efficient when south facing, but will **give** a good return up to 45 degrees off south in either direction.

When the panels are producing power, electrical equipment will automatically draw from them. Surplus electricity is exported to the grid.

The planning process is usually straightforward. Applications are typically processed in six to eight weeks, compared with up to two years for a wind turbine. It can be more complicated in protected areas, but even here it is usually possible to come up with a system that is acceptable.

Farmers installing solar panel systems have three choices;

- The size and output of the installation.
- Whether to go for a ground-mounted or roof-mounted system.
- Whether to pay for it themselves or have a free system installed.

Ground-mounted systems can be installed at the perfect angle for the panels to work and sited at the best spot to make the most of the available sunlight. They need about a third of an acre of land for a 50 kw system. They are easy to maintain, or even move if necessary.

A roof-mounted system means the installation is out of the way and not taking up valuable land. A 50 kw system on a roof

would need around three hundred and fifty square metres.

In some ways the decision about whether to go for a free-system or to buy one is simple. Because of the high rates of return, if you have the money you should pay for it to be installed.

For farmers who cannot afford to buy a system there is a second option; free-solar. Under these schemes, solar power companies will install the system for nothing. They take the income from the feed-in-tariff, but let the farm use any of the electricity generated. This means the farmer can still cut power bills. Some companies will also pay rent of up to a thousand pounds a year.

There can be geographical restrictions to free solar systems, the further south you are, the better. Anyone north of Yorkshire might struggle to find a company prepared to install for free.

The final consideration is the size. For maximum output, the simple rule is the bigger the better. But systems above 50 kw get a reduced feed-in-tariff payment. As a result, 50 kw is seen as offering the best returns. However, if your farm has power demands above 50 kw, it becomes commercially viable to install a larger system.

So if you do decide to go solar what should you look out for?

Your installer should have an MCS certificate, an accreditation from Ofgem that they have

been approved to install solar power systems.

For roof-mounted installations, farmers should get a structural survey to make sure the roof can take the weight.

Installers don't like working with asbestos roofs, but some will provide a new roof, which will add to the cost, but can still be financially viable.

Ask your installer if they have done similar systems of the same size. Take a look at the technical specifications. The solar panels must also be MCS approved.

Inverters, which convert the power from the panels from dc to ac, are an important piece of equipment. Make sure they are from a reputable manufacturer and come with a long warranty.

Installations need to be within 100 metres of a three phase grid supply point.

Finally, take a close look at the installer's projected figures for your farm. The European Commission gives figures for panel performance across the EU, your installer should provide you with them, or you can find them on the internet.

For more information contact Poppy Johnson, the Soil Association's Low Carbon Farming adviser on 0117 314 5127 or at pjohnson@soilassociation.org

Further information regarding low carbon farming is also available on our website www.soilassociation.org/lowcarbon.aspx

