

Solar F.A.Q.

Welcome Aboard!

New to [Solar](#) ? We've formulated an FAQ featuring some of the most commonly asked questions relating to Solar Electric Generation Systems

1. How do [solar power systems](#) work?

Solar power systems convert the energy from sunlight into direct current (DC) electricity. This is made possible because of the atomic structure of the materials used in producing solar cells. A simplified explanation is that in certain materials - such as a lattice made of doped (modified) silicon - the energy contained in one photon of light is sufficient to cause the electrons to jump from one atom to another, creating a current.

An Inverter then converts this direct current to household electricity (or alternating current [AC]), whilst at the same time matching this AC production to the signal (frequency and wave shape) of the electricity grid. Typically, a solar panel array is mounted on the roof but can also be mounted on ground fixings, such as a fixed frame or a tracker. Here in the southern hemisphere, the sun appears to be north of us (bear this in mind if reading information from the USA or Europe). Therefore, solar panels should be oriented to face the North and tilted at something close to the degree of latitude (our position relative to the equator and south pole) in order to generate as much electricity from the sun as possible. However, often times the system will be installed flush to the roof because of council requirements or the cost of racking exceeding the value of the additional production that would result from tilting the panels.

2. What is the difference between [Solar Hot Water](#) & Solar PV?

Solar power systems use the energy contained within light from the sun to generate electricity, and are commonly referred to as Solar PV or Photovoltaic systems within the industry. Solar hot water systems use the heat of the sun to directly heat water, and this type of technology is referred to as Solar Thermal energy.

With Solar PV (or Solar Electric) systems, there are no unsightly water tanks, and with systems connected to the electric grid, there are no batteries – excess production is sent to the grid for distribution to other homes (you get credit for this).

3. What is PV?

PV stands for Photovoltaics, derived from photo (meaning light) and volts (an electrical measure proposed by the scientist and inventor, Volta). Solar PV is used in industry literature to clearly distinguish solar electric systems from solar heating products.

4. Why are there no batteries in a Grid Connected Solar System?

Grid Connected means that the system is connected to the local power network (“the grid”). This is in comparison with stand-alone solar PV systems in remote areas, that do not have access to an electricity grid. With Solar PV (or Solar Electric) systems, there are no unsightly water tanks, and with systems connected to the electric grid, there are no batteries – excess production is sent to the grid for distribution to other homes (you get credit for this).

5. Why should I install a solar PV system ?

We should all strive to leave future generations with the same opportunity for prosperity that we enjoy. A big part of this is looking after our environment.

Much of Australia’s electrical production is sourced from Coal, a resource that sullies the environment during its extraction (scarring of land, dirtying water, tailings), during its transport (long journeys by road, truck and ship) and during its combustion (carbon dioxide, sulphuric acid, heavy metals such as mercury). Solar Power production displaces electricity from fossil fuel power stations, thereby reducing greenhouse gas emissions and the other negative ‘symptoms’ above. Solar Electric Systems are quiet, clean and reduce your electricity bill, whilst requiring little maintenance.

It’s possible that a solar system will also make your home more attractive to subsequent occupants - which is why many people say solar power systems add value to homes.

6. How long will the panels last ?

Many BP Solar panels from the 70s and 80s are still working today. Some of the older panels used at our community stalls were made in the mid nineties, and are still working today.

Solar panels have no moving parts, so the primary failure modes are corrosion and thermal cycling. Leading manufacturers, such as BP, carefully select materials and thoroughly test panels, in order to counteract the common failure modes. As a result, solar panels on the Australian market come with a warranty of up to 25 years depending on make or model.

When evaluating the legitimacy of warranties, bear in mind the history of the manufacturer and their current financial standing.

7. How long will the inverters last ?

SMA, Fronius, Conergy and Latronics inverters have 5 years parts warranties right out of the box. It's generally possible to purchase a warranty extension of a further five years, although SMA inverters bought together with BP Panels (through us) come with a 10 year warranty standard. SMA claim to have designed their inverter range for a 20 year life.

8. Will solar panels survive a hailstorm ?

In most cases, the answer will be Yes. Solar panels are made of hardened laminated glass. To pass Australian Standard and TUV testing and certification, solar panels are required to withstand a test involving a 1 inch solid ice ball (representing a hailstone) being fired at the solar panel surface, without breaking the glass or damaging the solar cells.

9. If I put in a grid connect solar system, will I still have electricity at night ?

Your electricity supply **will not be interrupted at night** as a result of installing a solar system. Note that solar panels need sunlight to generate power, and therefore power will not be supplied by the solar system at night. However, in Grid Connected systems the main board will automatically source power from the electricity network (the poles and wires in the street), ensuring that you always have access to electricity. The idea is that in the day time, your production will exceed your needs, creating a credit, which you can then use at night. Credit will only be created if you use less power than the solar system produces; in all other cases the solar power you use directly will substitute for power coming from outside.

10. Will my solar panel produce power during blackouts?

The good news is that most blackouts happen at night or during inclement weather – times when solar production is minimal or non-existent. If you have a standard grid connect system your inverter will automatically shutdown and disconnect itself from the grid during a blackout, in order to protect workers on the network. If it did not shut down, your system would continue to put electricity onto the grid. This would endanger power line service workers. Only systems with batteries can operate without the electricity grid.

11. What about aesthetics? Are they shiny? How reflective are solar panels ?

Solar panels are designed to absorb as much light as possible so as to generate the maximum amount of electricity. As such, it is unlikely that solar panels on the roof would create noticeable glare in excess of the existing roof surface.

For further details regarding Solar PV Installations, please visit our website www.greenforcesolar.com.au **or** call our team of engineers and specialists on 02 9557 1648