

Why Don't Solar Systems Work During Blackouts?

It may seem surprising, but solar systems will NOT normally work during a power outage. This fact sheet explains why this is the case, and discusses some of the alternative ways you can ensure you have power whenever you need it.

There are two reasons – one technical, and one to do with safety.

No matter what equipment you have, or what you use electricity for, the power supply needs to be steady and constant, or else your equipment and appliances will at best not work properly, and quite possibly get damaged.

The flow of power coming from your solar panels changes regularly, according to the amount of sunlight reaching the panels. Your solar installation takes whatever power comes from your panels, and together with the grid, provides a sufficient stable flow of power to meet your needs.

Of course your demand for power changes regularly too, as appliances are switched on or off. And if your solar panels are generating more power than you are using, the system will export the excess power to the grid, earning you money.

The grid can provide much more power than a solar system, so it is effectively the back-up source that allows the flow of power into a property to be stabilised. If there's a power outage and the grid can't stabilise that power, then the supply of power from the solar system into your premises would vary unacceptably, and possibly damage your equipment and appliances.

So your solar system inverter acts to protect your property from damage by isolating itself from the network.

The second reason that solar shuts down during a blackout is safety.

During a power outage, AusNet Services sends out repair crews to find and fix the faults. To avoid endangering them, it's essential that they know if and where the power is flowing. Their safety could be jeopardized if there is a local power source like a solar system pushing an electric current onto the power lines.

For these two reasons, the Australian Standard requires that in the event of a power outage, solar systems must automatically shut down.

Solar systems have detectors that sense if you are connected to the network, and whenever grid power is down, they automatically shut down too, to protect utility workers and customer property.



R: A domestic battery and solar inverter.

So what can I do to keep my power on?

Every situation is different, and this depends partly on what your power requirements are. How much power do you need? How steady is your demand, and how important is an uninterrupted flow of power?

Some people might find it economical to use a small fuel generator (for example, just to run a water pump in a rural situation).

If uninterrupted supply to a small device (a light or a computer, for example) is required, a UPS device (Uninterrupted Power Supply – essentially a battery with smart controls) might be suitable.

It may also be possible to install a separate circuit to essential appliances. Expert advice for your specific circumstance will be essential.

Batteries

Technological and industrial developments mean batteries have started to attract widespread public and industry interest in the last couple of years.

There will always be a need to separate your system from the grid in the event of a power outage, for the safety reasons discussed above. But in this situation a battery can ensure a steady and constant power supply within your premises.

Battery storage systems can provide the necessary backup power supply to run some or all of your household appliances.

In this context, there are three types of battery storage systems:

1. No backup power: the battery only works when the grid is available, similar to solar systems
2. Limited backup power: the battery is usually wired up to power a single circuit in the house supplying specific essential loads (e.g. fridge, lights, water pump)
3. Full backup power: the battery can power the entire house (for the duration of its storage capacity)

Both technology and prices are constantly changing (usually for the better), and will continue to do so, so some research into your needs and the best way to meet them is the key.

If you are installing a solar system from scratch, and continuity of supply is important to you, you should explore the many solar-battery-inverter offerings.

If you already have a solar system, you can add a battery into the system. You'll probably also need a second inverter.

For the average home, the cost to add battery backup could range from \$5k at the cheap end, to \$10k for a typical system, up to \$20k and beyond for large, high powered systems. But remember that battery prices are continuing to fall and their technology continues to improve.

There is no one right answer – just many possibilities. Do your homework, and find the right solution for you.

