



How to calculate your solar power requirements:

1. Choosing the right solar panel for your needs is like choosing a battery. In the same way that a bigger battery will provide more power for longer, a larger Solar panel will collect more energy in less time.

The right size of panel will depend on variables such as the power required by the appliance, the length of time you want to use it and how much sunshine you get at the time of year.

2. There are three things to consider when choosing a solar panel or creating a solar system.

You need to know what appliances you will be using and how much energy they require, how much energy your battery can store and which solar panel will replenish your 'stock' of energy in the battery in line with your pattern of use.

3. How much energy will your appliance(s) use over a period of time?

The power consumption of appliances is given in Watts (e.g. 21" fluorescent light, 13 W). To calculate the energy you will use over time, just multiply the power consumption by the hours of use.

The 13W light fitting, on for 2 hours, will take $13 \times 2 = 26\text{Wh}$ from the battery.

Repeat this for all the appliances you wish to use, then add the results to establish total consumption.

4. How much energy can your battery store?

Battery capacity is measured in Amp Hours (e.g. 17Ah). You need to convert this to Watt Hours by multiplying the AH figure by the battery voltage (e.g. 12V).

For a 17Ah, 12V battery the Watt Hours figure is $17 \times 12 = 204\text{Wh}$

This means the battery could supply a 13W fluorescent for 15 and a half hours, 204W for 1 hour, or 102W for 2 hours, i.e. the more energy you take, the faster the battery discharges.

5. How much energy can a solar panel generate over a period of time?

The power generation rating of a solar panel is also given in Watts (e.g. STP010, 10W). To calculate the energy it can supply to the battery, multiply Watts by the hours exposed to sunshine, then multiply the result by 0.85 (this factor allows for natural system losses).

For the solar 10W panel in 4 hours of sunshine, $10 \times 4 \times 0.85 = 34\text{Wh}$. This is the amount of energy the solar panel can supply to the battery.