



## Solar Panel Rentals – Frequently asked questions

Keen to rent a solar panel, but not sure if it will be enough to keep things going?

So, you are planning a trip, and some of your trip involves camping somewhere where there is no power available, but you are not sure if your batteries and solar panels will cope with the load.

Remember that a solar panel is usually used in addition to other charging methods (Vehicle's alternator), and therefore should only be considered as a means to extend the life of your existing setup. For example, if you have 1 x 1.5AH battery, and only run a small fridge from it, it might last 2 days. If you add a solar panel to the mix, then you might be able to extend this to 3 or 4 days. But, there are many factors which will govern the above. Here are a few things to consider.

- What is the condition of your batteries, and how many batteries do you have available to provide power to your fridge (or fridges), lights, water pumps, invertors etc? Remember that batteries do not last forever, and as they age, they will be able to provide less power, as well as they will not charge as efficiently compared to when they were new.
- What is the condition of your wiring? This is because whilst your vehicle is running, the alternator is busy trying to charge the batteries and the bigger and better the wiring, the more it will be able to charge your batteries. Assuming of course that your batteries are in good condition and accepting a charge. A dead battery cannot be charged, even if you connect a solar panel to it.
- How many AMPS (How much power) will you be pulling or using from the system. It is always a good idea to know how many AMPS all your devices use, so that you can plan accordingly.
- Fridge/freezer - This is normally the highest consumer of power, and due to environmental conditions, it is impossible to predict how much power it will use whilst on a trip. Suffice to say, in most cases you can probably double the amount of power a fridge/freezer uses whilst testing it at home, compared to whilst on a trip. This is because the ambient temperature is usually much hotter, you will more than likely put warm items into it, you will probably open it more often etc. The fridge will therefore probably run close to a 100% duty cycle, instead of around 50%.
- Lights - Whilst only used at night for a predictable period of time, and therefore you can plan easier, lights can still use a fair amount of power, especially if you do not use efficient LED lights but rather have the older 12V fluorescent lights.
- Water pumps – The power consumption whilst running is high, but they are usually used seldom and therefore are not considered serious power consumers.
- Invertors – For charging batteries, running small TV's or laptops etc. Whilst probably not very high in terms of power consumption, they will still consume a few Amps, which if not replaced, can shorten the overall period that your system will provide power.
- Environmental Impacts – When using solar, a cloudy day can reduce the panels charging abilities to less than 10% of its' rated output. If it rains, it will be close to zero. Shade, even a small piece of shade covering a small area of the panel, will reduce its' output dramatically. A high ambient temperature (>30 Deg), will result in the fridge/freezer consuming more power to try stay cold, as well as the batteries not accepting a charge as readily as they would if it were cooler. Therefore, keeping batteries and fridge/freezers in a cool place, in the shade, and in the case of the fridge/freezer as insulated as possible, will all assist in making sure you consume the least amount of power from your system
- Solar Panels – When deciding which solar panel is applicable, the first place to start is checking its' maximum rated output. However, a panel will rarely produce exactly what it's maximum rated output is supposed to be,

unless all factors are perfect, such as angle with the sun, clear atmosphere etc. The other thing to consider, is that the panel will start producing a small amount of power when the sun rises and shines on the panel, and gradually increase the output throughout the day with the maximum normally occurring between 10h00 and 14h00, and thereafter decreasing again until the sun sets. Therefore, if a panel is rated at 4.8 Amps, on a good sunny day it will produce in the region of approximately 20 - 30 Amps. If the optimal angle with the sun is maintained throughout the day, then it is possible for the panel to produce more in excess of 30 Amps.