

Solar Power System Sizing

Thank you for your inquiry.

To help us to design your power system, we ask that you fill in the questions on the following pages and return to us at your earliest convenience.

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Name:

Address:

Postcode: Phone: Fax:

Email:

Location of Power System

The location of your site is important:

- To obtain insolation figures (the energy content of sunshine) for your location for each month of the year (to determine solar panel performance).
- The location will give us an idea of minimum & maximum daily temperatures of your site which will affect solar panel performance & the power consumption of refrigeration, space cooling etc.

Location of Power System:(if different to above)

Longitude and Latitude of your location.

Longitude: Latitude:

If possible provide **minimum, average and maximum temperatures** for each month for your area.

Month	Minimum Temp	Maximum Temp	Average Temp
January
February
March
April
May
June
July
August
September
October
November
December

What system options are available?

There are three broad types of systems available:

1 - Stand Alone: These fall into two categories –

- a) systems which are entirely reliant on non-mains powered energy supply (RAPS Remote Area Power System), and
- b) non-mains powered systems which are installed in the same premises as mains power BUT do not interact with the mains power in any way.

2 - Grid Feed: With a grid feed inverter you can send the power from PV solar panels direct to the grid. Your incoming power would be coming directly from the grid. A grid feed system does not incorporate a battery bank and therefore does not give you any continuity of power in the event that the grid fails.

3 - Grid Interactive: With a grid interactive setup all the power is directed through and monitored by the inverter(s) which will allow you to sell power to the grid when you have a surplus of power, buy power from the grid when you don't produce enough power to meet your own needs and charge the battery bank from the grid if and when required (automatically). A grid interactive system will allow you to continue having

power even when your neighbourhood is having a power blackout. You may not even have realised that there was a blackout until you realise that all the lights in your area have gone out except for your own.

AC/Grid/Mains power.

What type of system are you considering?

- ☐ Stand-alone
- ☐ Grid Feed
- ☐ Grid Interactive

Is grid power connected at your site?

- ☐ Yes
- ☐ No
- ☐ Is available but not connected

What We Will Recommend

- **Battery Storage.** The battery voltage (eg 12V, 24V, etc) and the battery capacity (amp-hours at the 100 hour rate) you should use. This capacity would normally assume 5 days of battery storage to a maximum of 70% discharge.
- **Solar (PV) Panels.** The type and number of solar panels that would be cost effective and whether they would meet all your requirements.
- **Backup Generator.** The recommended power backup, which may be a petrol/diesel generator and would incorporate a 240 volt supply and separate battery charger.

Please Note: The above recommendations depend upon the accuracy of the information you provide.

Energy Sources

You may have a combination of power and energy sources to meet your requirements. The various sources may include sun, wind, water, or a generator.

With a battery based power system you can use any combination of energy sources to charge the battery bank.

Solar. How far (in metres) from the house to the solar array. Also please indicate between which times and in which season this site is affected by shading.

Distance: metres

Shading times and months:

Wind. If you feel that your site may be suitable for a wind turbine, tick this box. ☐ extra form will be sent

Hydro. If you feel that your site may be suitable for a hydro turbine, tick this box. ☐ extra form will be sent

Generator (Petrol/Diesel/Gas). A generator may be used as an emergency backup or to augment a power supply. Please indicate size (kVA) if you already own one.

Size: kVA

If you intend to purchase a generator, tick this box. ☐

Recommendations

Cooking & Heating. It is recommended you burn a readily available fuel (eg gas and/or firewood) to produce heat. To use electricity for cooking and heating is costly and inefficient.

Hot Water. Hot water can be obtained by using a solar collector (solar hot water system). It is possible to combine the water heating potential of a stove or instantaneous gas heater and a solar collector.

Refrigeration. An efficient fridge is a must for a solar system. DC fridges are excellent as long as the batteries are close to where the fridges / freezer is going. AC fridges & freezers are becoming a lot more efficient now and can be further away from the batteries than DC fridges. It is recommended that AC fridges are relatively new as older fridges are extremely inefficient. Power consumption for refrigeration is relative to ambient temperature so it pays to position the fridge or freezer in the coolest possible location in the house.

Lighting

[illegible]

Notes:

- Please provide a **daily average**, not a minimum or maximum for lighting usage. In our calculations we will take into account the fact that the lights will be used for a shorter period in the summer months and a longer period in the winter months.

Appliances

[illegible]

Notes:

- Water Pumping requirements, measured as hours/day. It is assumed that water consumption increases with higher temperatures.
- FRIDGE/FREEZER size in kilowatt hours (kWh)/year (as listed on the “star rating” sticker on modern appliances).
- With all OTHER APPLIANCES it will be assumed that there are no seasonal variations in their usage. Please provide daily average use.
- You may wish to consider using a petrol or diesel generator to operate some loads directly (eg washing machine, vacuum cleaner, iron, power tools, and transfer pump).