

Power System Sizing

Dear Customer,

Thank you for your inquiry. In order for us to design an appropriate power system for you, we ask that you fill in the Power System Sizing Form. If you have access to the internet, you may find our pre-filled online quote forms easier to use*. Otherwise, please use the enclosed form. If you want us to install the system or if you have shading problems, please also fill out page 4 of this form.

Installation Details

Please indicate where the system will be installed. Please also find out how much it would cost to get a grid connection to that location (even if you do not want one). Some rebates apply if grid connection cost is above a certain threshold.

Load Profiles

In filling out the form you will need to consider the following points:

- **Lighting:** You need to provide a **daily average**, not a minimum or maximum. In our design we will take into account the fact that the lights will be used for longer in the winter and shorter in the summer.
- **SPACE COOLING:** For all space cooling requirements please provide **daily maximum** use. It will be assumed that in the cooler winter months these appliances will get little or no use.
- **WATER PUMPING:** Generally the reverse of lighting. Water consumption usually increases with higher temperatures, and to a much lesser extent, the length of daylight. You need to provide your pumping requirements, measured as hours/day (if applicable).
- **Fridges/Freezers:** Please provide size in litres.
- With all other appliances it will be assumed that there are no seasonal variations in their usage. Please provide **daily average** use.

NOTE: You may wish to consider using a petrol or diesel generator to operate some loads directly (e.g. vacuum cleaner, iron, power tools, and transfer pump). Please indicate if this is the case.

Recommendations

Cooking & Heating. It is recommended you use gas and/or firewood for cooking and heating. To produce this amount of heat using electricity is costly and inefficient.

Hot Water. Hot water can be obtained by using a solar hot water system. It is possible to combine a wood stove or gas heater and a solar collector.

Refrigeration. Power consumption for refrigeration is relative to ambient temperature and it pays to find the coolest possible location to place the fridge or freezer. Note that for every degree cooler that the fridge is run at there is a 5% increase in power consumption.

It is generally not recommended to run a 240 volt fridge and/or freezer from a battery bank (via an inverter) due to the high power consumption, unless you want a fridge larger than 220 litres. We generally recommend either to use a 12V or 24V DC compressor motor fridge and/or freezer or to use LP gas fridge/freezer. The use of a LP gas fridge/freezer will reduce the capital outlay for the power system, but a 220L gas fridge will use four 45kg gas bottles per year.

Space Cooling. Refrigerative air conditioning on a stand-alone power system is quite expensive. Evaporative air conditioning is much less expensive but does not work so well in a humid climate. Ceiling fans, extractors and oscillating fans are recommended.

Accuracy of Results

This assessment takes into account power transmission and battery storage efficiency as well as local climatic and insolation data. The results of this service depend upon the accuracy of the information you provide.

Note: The results of the assessment will allow for seasonal variations in usage and power consumption as required by Australian Standard (AS) 4509.2 - 2002.

* <http://www.rpc.com.au/solar-systems/off-grid-solar-power/residential-systems.html>



RAINBOW POWER COMPANY LTD

Designers and Installers of Solar Systems since 1987

1 Alternative Way (PO Box 20240)

tel: (02) 6689 1430

international: +61 2 6689 1088

email: sales@rpc.com.au

A.B.N. 74 003 323 420

Nimbin NSW 2480 Australia

fax: (02) 6689 1109

international: +61 2 6689 1109

website: www.rpc.com.au

Lic:198555C (NSW). 69172 (Qld)

Installation Details

Name:

Contact Address:

Phone: Fax:

Installation Address: Same as above Motor Home / RV Different Address:

If you can, please provide the longitude and latitude of the location of the proposed power system.

Longitude: Latitude:

How much to connect to the electricity grid?

\$0 (is connected) \$0 (but not connected) \$1-14,999 \$15,000 – \$29,999 > \$30,000

Which energy source(s) do you want to utilise?

With a battery based power system you can use any combination of power and energy sources to charge the battery bank. The various sources may include sun, wind, water, or a generator using diesel, petrol or gas as a fuel.

Solar Wind Hydro Diesel/Petrol/Gas generator

What type of power system do you want? There are three broad types of systems available:

- **Off Grid:** These fall into two categories -
 - 1) systems which are entirely reliant on non-mains powered energy supply, and
 - 2) 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.
- **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.
- **Grid Feed:** With a grid feed inverter you can use the power from your power generator before you buy of the grid. Any surplus would be exported to the grid and a feed-in tariff may be payable. 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.

Off Grid (no mains) Off Grid (in addition to mains) Grid Interactive Grid Feed

If you ticked *Grid Feed* above, please skip the next page (Load Profiles) and include a typical and recent power bill instead.

Location for batteries (if any):

Location for inverter(s) (if any):

Existing equipment (make, model, age, technical specifications, etc):

Load Profile - Lighting

I plan to use: 12/24V Lights 240V Lights Both Not Sure

Number of lights / comments	Location	Watts	Hours used / day
	Living Room		
	Dining Room		
	Kitchen		
	Bedroom 1		
	Bedroom 2		
	Bedroom 3		
	Bedroom 4		
	Bathroom		
	Toilet		
	Laundry		
	Office		
	Hall		
	Garage		
	Outside		
	Shed		

Load Profile - Appliances

Appliance	Volts	Qty	Watts	Hours used / day
Fridge make, model and size (litres):				
Freezer make, model and size (litres):				
Dishwasher make and model				
Microwave				
TV				
DVD				
Stereo				
Computer				
Other ICT (modem, printer, phone, answering machine, charger)				
Washing machine (make & model) Loads per week:				n/a
Vacuum cleaner				
Ceiling Fan				
Power Tools				
Domestic Pump				
Transfer pump (e.g. pool)				

Please attach extra sheets for further lights and appliances if required

Roof Description for Solar Installation

Please fill in this section if you intend to have solar panels mounted on a roof. For ground mount installations, please still fill in the Shading section.

Roof Orientation:

Indicate in degrees (East or West) from North, e.g. 10°W, or 0° (=north)

Roof / Pitch Slope (in degrees):

Roofing material: Tile Corrugated TrimDek Klip-Lok Other:

Roof Dimensions in metres (length x width):

Height of eaves above ground in metres

Solar Panel Mount Preference: Flush Mount Tilt Mount

Shading

The roof / ground mount area is shaded in the morning/evening:

Winter mornings till Summer mornings till.....

Winter evenings from Summer evenings from

The roof / ground mount area is shaded during the day:

No Yes, for about hours.

Please include photos of the roof / installation area and/or add a sketch below.