



How much solar?

A question often asked is: “How much solar do I need?”. This is a tough one to answer because a lot depends on the lifestyle you have when using your RV – plus other factors such as the environment you camp in, and even how often. The very real possibility is that solar is not for you at all!

Having said that, there are some applications, and levels for which solar may suit you. At the end, I will give you some general ‘rules of thumb’ for sizing various components and their relation to each other.

1. As a battery tender
2. As a weekend buffer (for the minimalist)
3. As a significant contributor
4. As a full-support energy system
5. Does not apply

So lets get into what I mean by all those terms.

As a battery tender:

If you simply want to keep your battery charged up, a small solar panel (with exposure to light) can provide just enough power to keep your battery topped off. This is far more important with the traditional flooded lead-acid (FLA) battery, as that chemistry much prefers to be fully charged at all times to prevent sulfation and pre-mature battery death. Caution must be used that you are not charging that battery to the point where it loses too much electrolyte (fluid/water), thus exposing the plates to air and seriously damaging the battery’s capacity and ultimately its lifespan. Thus, a small solar controller and regular inspection are well advised. (Note: not necessary with Lithium Iron Phosphate (LiFePO4) batteries.

As a weekend buffer

If your energy demands over the course of the occasional extended weekend camping trip end up exhausting your battery, again – a small solar panel and controller can extend that. This generally applies if all you are doing is using a few lights, water pump, and maybe a slide (pushout). That little extra bit of power coming in will balance out what you use, and keep that battery topped up. The same cautions apply here as with the battery tender – regular inspection and topping off the fluid as necessary. (Again – not applicable with lithium batteries).

The significant contributor

Generally, this is a somewhat higher demand camper – often using power hungry items such as a propane fridge, overhead fans, furnace – perhaps a CPAP or other medical device. They may even have a small inverter for their television set. As such, they need a significant contribution from an outside power source to keep their batteries viable – often enlisting a small generator to top them off over the course of a trip. This is a perfect scenario for a solar implementation of modest size...say between 200W and 600W.



The full energy system

Lastly there are the folks whose needs are higher as they use a residential refrigerator, multiple power-hungry appliances, perhaps even an air conditioner. As those energy demands increase, so does the need for a large battery capacity, and larger solar array to charge it. These folks might have a kilowatt or more of solar at their disposal – either on the roof, or deployed in other ways.

Does not apply

If your camping is of the style where RV parks are the preferred destination, or you simply ‘moochdock’ at friends and relatives – plugged into shore power, you likely have little need for a solar energy system. You may also have no issue with running a generator for those times when additional power is required. Again, solar is likely not for you.

Ratios:

In the beginning of this article, I mentioned some general rules of thumb for sizing a potential solar system – and the equivalent battery power associated with that. Here is a table that gives a very rough idea of what I find works for most people – given the idea of implementing solar.

Use Type	Inverter Size	Battery Size	Solar Size
Battery Tender	N/A	100A (useable*)	100W
Weekend Buffer	N/A	100A (useable)	200W
Significant Contributor	<1000W	100A (useable)	200W - 400W
	1000W	100A (useable)	200W – 400W
Full Energy System	2000W	200A (useable)	400W – 600W
	3000W	300A (useable)	600W – 800W
Air-Conditioned Unit	3000W	400A (minimum)	800W (minimum)

* Useable power in amps will be determined by the size and chemistry of your battery. Lithium typically has 100% capacity utilization, whereas flooded lead-acid is only 50%.

Again – these are generalizations with a **minimum** ratio of 2:1 watts/amps for solar and 100amps/1000W of inverter.

Proper sizing really requires a thorough power audit, itemizing all your appliances and their duty cycle plus use patterns. As such, this is very specific to your situation and requires a substantial investment in time and data gathering. If this is something you wish to go further with, feel free to call or email for a consultation.