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## Solar power generator

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all year.

This how-to will help you make a solar power generator for around \$350 dollars or less depending on the materials that you buy.

What will this generator do, you ask? If the 20 watt solar panel received 5 hours per day of full sun, then you would have generated 100 watt-hours of energy.

If you are using something that draws 25 watts, then you could power it for about 4 hours with the energy that the solar panel collected that day.

Since this project involves a battery, you have the ability to store over 400 watts of energy. This solar power generator will be the coolest project that you do

1. Pick up a solar panel rated at 12V. You should be able to find a good, durable solar panel for about \$175.
2. Next, get a SunGuard 4 amp charge controller. You can find them on the web by doing a search on [Google](#). These should run about \$25.
3. Next get a 32 amp-hour sealed battery. They run about \$60 or so.
4. You'll need a DC to AC power inverter. I would recommend a 175W power inverter. You are looking for a power inverter such as [this](#). \$30 or so will land you this simple, yet effective inverter.



5. Grab a inexpensive voltage meter to monitor the load on your generator.

Now, this is the part where you need some creativity. Where would you plan on using your solar power generator? What would you house the pieces apart from the solar panel in? It is always good to have a plan, right?

6. I would recommend either a wooden box or preferably a plastic cooler simply because of the waterproofing that it would provide. Grab a drill, some insulated wiring (THHN / THWN Jacketed, UV Resistant Two-conductor Installation Wire) , and your wits and drill out a spot on the box or cooler. These instructions will sound difficult, but they are a lot easier when you have the items in front of you.

7. Place the voltage meter in this spot and connect the insulated wiring from the meter to the wing nut terminals on the battery. Remember, always connect the positive (+) pole first, then the negative (-) pole.



8. Ensure that the solar panel is properly wired to match the nominal operating voltage of the solar charge controller and battery system. Proper wiring diagrams for PV module/array can be obtained from the manufacturer or system designer. Identify the positive and negative leads of the PV array prior to connecting the charge regulator. The charge controller will automatically prevent the battery from overcharging.

9. Connect the battery leads to the terminal blocks on the charge controller labeled "Battery", also ensuring that the polarity of the battery leads are matched to the polarity of the terminal blocks.

10. Due to the controller's very high efficiency, it will be destroyed if hooked up improperly. Connect the PV array input leads to the terminal blocks on the controller labeled "PV Array", ensuring that the polarity of the input leads are matched to the polarity of the terminal blocks.

(positive to positive, negative to negative)

11. Connect the negative and positive leads of the load to the terminal block labeled "Load", ensuring that the polarity of the load leads are matched to the polarity of the terminal blocks.

(positive to positive, negative to negative)

Note: the regulators are protected if the battery connections are removed and the PV array remains connected. (It will rapidly turn on and off without overheating)

12. Okay, now take a break. That wasn't so hard was it? Now connect the power inverter to the battery, and get ready to mount your solar panel. Mount your solar panel in an area where the most sunlight is throughout the day. If you take this generator camping with you, be sure to secure the solar panel to avoid it falling or shifting in the wind.

This solar power generator will be capable of running a laptop, a fan, a small TV, etc...Small appliances will run easily off this system if the battery receives a decent charge. Remember that the battery holds over 400 watt hours of energy. The sunlight will be trapped, stored, and turned back into energy.

While this may work for us, it may not work for you. Consider buying a [solar power generator kit](#) and following more detailed instructions from the manufacturer.

*Disclaimer: Please use caution when working with electricity and new technologies. Just because we were able to build a solar power generator does not imply that you will be able to just by following the directions. EnergyRefuge.com assumes no liabilities for accidents involving our instructions. We used certain items with specific voltages and ratings. Please use common sense and please consult a professional if needed.*

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