



# Using Solar Energy to Heat Your Tortoise House

Written by: Dennis Stephens

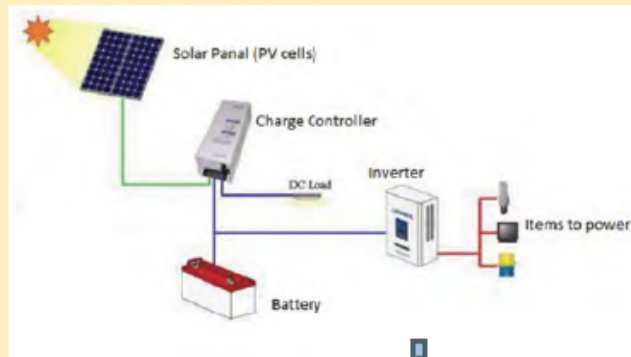
Southern California is an ideal place to raise tortoises. The weather stays very consistent with little rain and few freezes. Even in this reptile paradise, though, we have a couple of months when certain species that do not hibernate need help keeping warm during the cold nights. While this time is short, it can be very costly, especially if you keep a large collection of tortoises such as leopards, sulcatas, or red foots. Heat emitters or red heat bulbs, especially the higher watt varieties, drain energy and pocket books. Fortunately we can use our biggest resource—the sun—to help us save money, and more importantly our tortoises.

Using solar energy to keep our tortoise houses heated is very easy and cost effective. It is also an interesting way to teach about renewable resources for the future. So why doesn't everyone use solar energy to heat their enclosures, and power other areas? Most people don't understand how solar works. They get intimidated by the technical terms and don't realize it is easier to set up than they imagined. We will discuss some of the technical terms, and then get into a basic solar set-up for your tortoises or outdoor reptile enclosures.

What is solar, and how does it work? Solar energy is quite simply energy from the sun converted to electricity. We will not go into detail about how that works—just the basic information that we need. The sunlight hits photovoltaic cells (solar panels) and this creates direct current electricity or DC electricity. This is the same type of electricity produced from batteries. The solar panels therefore can be used to charge batteries. Most of the lights and heat emitters we use run on alternating current or AC power. For this reason, we need to convert the solar produced DC power to useable AC power. This is done with a power inverter. The solar charged DC batteries are attached to an inverter; the heat source is then plugged into the inverter

and ready for use. The following diagram illustrates this chain of power:

Now that we have discussed what solar is and how it works, we can talk about costs. While some kits can be very expensive (usually the on-grid home kits), there are basic kits that are easy to install and very affordable. The initial cost for supplies can run anywhere from \$80 up to \$500. These costs depend on how much power you need, how many systems you are powering, and the distance between them. For example, to heat one small tortoise house you would only need a basic kit, which includes a battery, solar panel, charge controller (this stops overcharging of the battery and distributes power in multiple set-ups), and an inverter. This kit can cost as little as \$80. The more power you need, the more supplies you will need, such as bigger inverters, additional batteries, more solar panels, etc. These initial costs will be earned back by the savings on your electricity bill and through future uses.



Installing a solar kit can do much more than heat your tortoise enclosures in the winter. Summer can get hot, and saving water and electricity is just as important at this time. Your solar kit can now be converted to run water pumps, fans, cooling systems, and a myriad of other items. By running solar and utilizing timers, thermostats, and other automated systems, the savings can be much more than monetary. Saving time and labor is equally as important to some.

Solar energy can do so much for your pocket book! Plus it can save you time and energy, and it is a responsible way to power your passion for tortoise keeping. With these kinds of savings, more people can afford to keep tortoises comfortably, which can result in more adoptions and fosters, and fewer releases or relinquishments.