

## PROS OF USING SOLAR POWER

### Basic Principles of Solar Energy

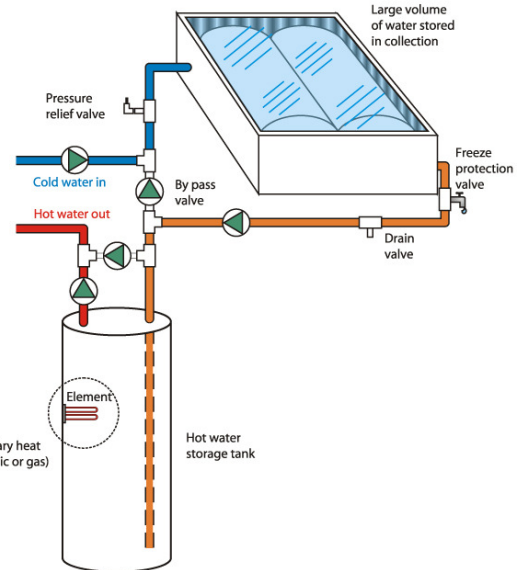
Solar power is perhaps the most renewable and pollution-free method of power generation available in today's market. Simply put, you're capturing energy from the sun and turning it into energy that can be used for everyday needs in your home, such as electricity and hot water heating.

**Electricity:** Heat waves from the sun are captured by solar panels, usually mounted on the roof of your home. These panels contain clusters of photovoltaic cells (*photo* → *light*, *voltaic* → *electricity*). Heat energy from the sun excites electrons within these cells, creating an electrical direct current (DC), which is the same type of current created by batteries. Since most home appliances run on alternating current (AC), or the type of current delivered by power lines, the DC current must pass through an inverter where it's changed into an AC current. The generated electricity is then ready for use in your home. The entire process may sound complex, but all the necessary components can be easily installed right in your home.

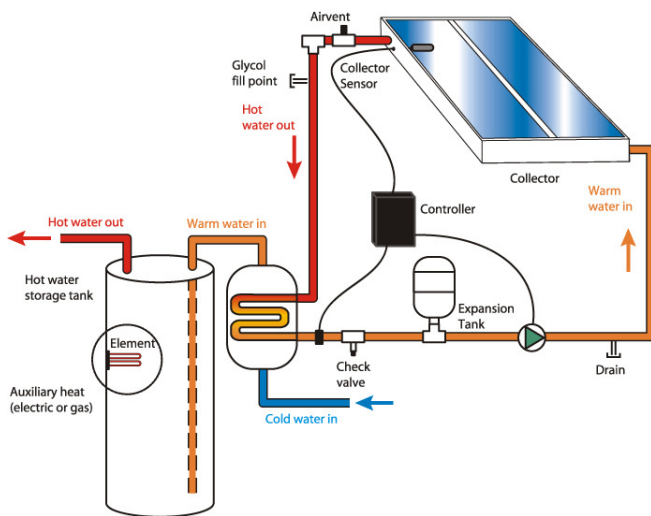
**Hot Water:** A good visual of this process is to think of a charged garden hose that's been left out in the sun all afternoon. When you turn the hose on, the stored water within the hose is very warm upon exiting the nozzle. Solar water heating systems essentially share this same concept, the exception being that the process occurs on your roof. There are several different types of systems available depending on your location:

- Passive System
  - Perhaps the simplest system in areas that rarely see below-freezing temperatures. Water is stored in a roof-mounted reservoir where it's heated by the sun. This warm water is then gravity fed to your home hot water storage tank. The system operates without need of a pump or controls, further simplifying maintenance. The only "con" involved is that your exterior water supply can be vulnerable to freezing in colder climate zones.

Batch Collector Passive System



Active Indirect System



- Active Indirect System
  - This system works much like that of a geothermal heating system. A water or anti-freeze solution is circulated through a closed loop system where it travels through a series of pipe loops inside a roof-mounted collector panel. Heat from the sun is absorbed by the panel and pipes within. By the time the fluid exits the panel it can be as warm as 50° to 80°F. The heated fluid is pumped through a heat-transfer unit where it warms the cool water heading into your home hot water storage tank. This type of system is most common in areas where below-freezing temperatures are common.



- Active Open Loop System
  - Works similarly to an indirect system, except there is no antifreeze solution. Instead cool water heading into your home is pumped to the collector plate on your roof, where it absorbs solar heat. This same water is delivered directly to the hot water storage tank and is ready for use in your home. Typically, this system is tied into an alternate water-heating means so that you will still have access to hot water during periods of high use or lack of sunlight. The main “con”, however, is that since this system circulates pure water it can be susceptible to freezing unless further safeguards are included.

[www.solarhome.org](http://www.solarhome.org)

### Net Metering

Net metering, also referred to as energy banking, is an option that allows you to sell electricity back to the power company. If you happen to produce more electricity than your home uses, you can “bank” this excess energy with your power company, which will cause your meter to spin backwards. In some cases, the power company may even *pay you* for your electricity!

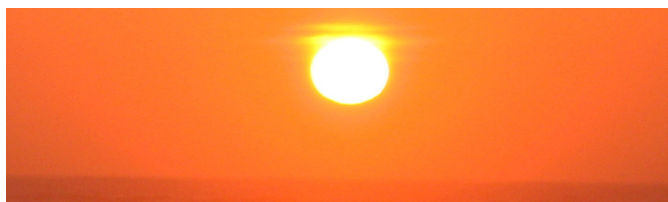
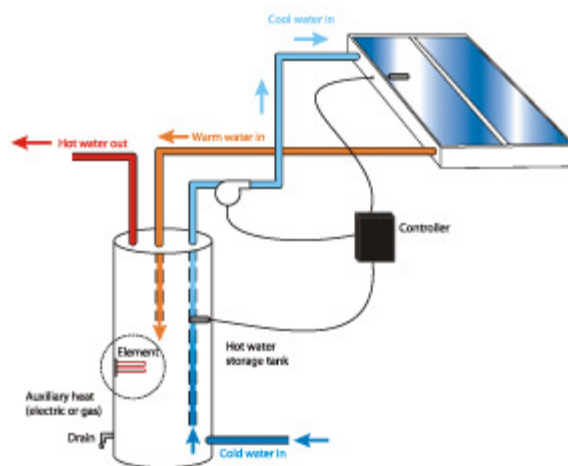
Due to the rise in clean energy interests, most states now have net metering programs. In order to pursue this option, you must first contact your local power company and let them know you plan on pursuing an alternate energy source. They will be able to guide you through the process. You should also research your state and local laws regarding net metering.

[www.thesolarguide.com](http://www.thesolarguide.com)

### Pros of Solar Energy:

- Reduction in energy costs; conventional gas or electric utilities will usually still be needed, though using solar energy can significantly lower these amounts.
- If net metering is available in your area, you can significantly lower your monthly power bills, possibly even making money!
- Quiet operation.
- While more expensive initially, the savings overtime will more than compensate for installation expenses.
- Completely pollution free.
- Can be implemented wherever a solar panel can be installed, bringing electricity to even the most remote areas.

Active Open Loop System



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