

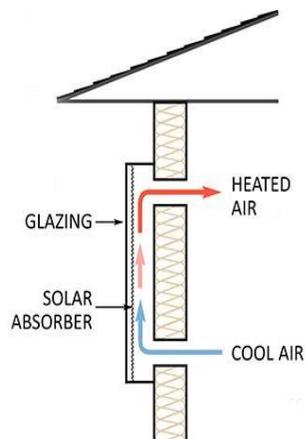
# What are all your solar home install options - with Per Tonnisen

## Types:

- Hot Air
- Hot Water
- Photovoltaic cells

## How solar air heaters work

### Cost-effective to build



Solar water heaters -- also called solar domestic hot water systems -- can be a cost-effective way to generate hot water for your home. They can be used in any climate, and the fuel they use -- sunshine -- is free.

Solar water heating systems include storage tanks and solar collectors.

There are two types of solar water heating systems: active, which have circulating pumps and controls, and passive, which don't.

### Active Solar Water Heating Systems

There are two types of active solar water heating systems:

Direct circulation systems - Pumps circulate household water through the collectors and into the home. They work well in climates where it rarely freezes.

Indirect circulation systems - Pumps circulate a non-freezing, heat-transfer fluid through the collectors and a heat exchanger. This heats the water that then flows into the home. They are popular in climates prone to freezing temperatures.

### Passive Solar Water Heating Systems

Passive solar water heating systems are typically less expensive than active systems, but they're usually not as efficient. However, passive systems can be more reliable and may last longer.

There are two basic types of passive systems:

#### Integral collector-storage passive systems

These work best in areas where temperatures rarely fall below freezing. They also work well in households with significant daytime and evening hot-water needs.

## Thermosyphon systems

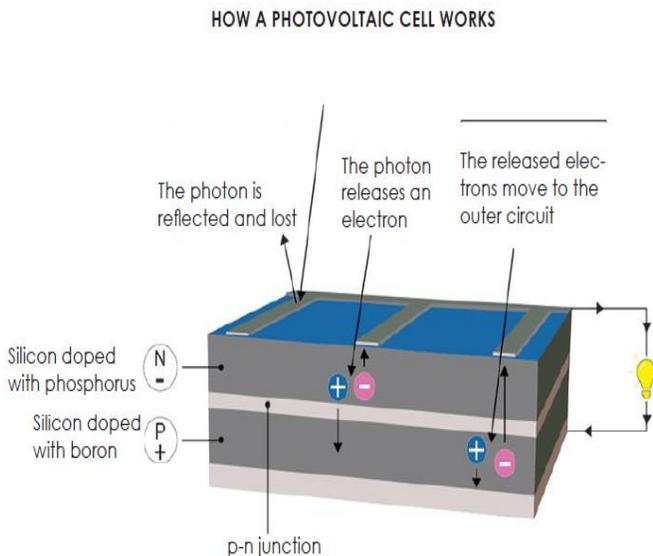
Water flows through the system when warm water rises as cooler water sinks. The collector must be installed below the storage tank so that warm water will rise into the tank. These systems are reliable, but contractors must pay careful attention to the roof design because of the heavy storage tank. They are usually more expensive than integral collector-storage passive systems.

## Solar wind determining your electrical requirements

Key steps are: battery selection, inverter selection, PV Panel and Wind generator calculations, and finally charge controllers.

## Photovoltaic cells

A photovoltaic (PV) cell, also known as a solar cell, is an electronic component that generates electricity when exposed to photons, or particles of light.



### Installation steps:

Step 1: Bury Conduit and Build a Platform.

Step 2: Mount the Panels.

Step 3: Secure the Rear Legs.

Step 4: Wire the Solar Modules.

Step 5: Understand the Wire Connections.

Step 6: Connect the Cables to the Control Panels.

Step 7: Ground the System.

Step 8: Make the Electrical Connections Inside.

Wind and solar energy are renewable, clean, and cost-effective. Depending on your location and the type of solar home system installed, you'll typically see a return on investment anywhere from six to 30 years as well as lowering your electric bills.

In general, the proper installation of solar water heaters, photovoltaic cells, and air heaters depends on many factors: solar resource, climate, local building code requirements, and safety issues.

**Overall, maybe you could consider going off grid!**