

## Keep on the Sunny Side

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The sun provides an abundance of unharnessed energy that has the potential to be used cleanly and efficiently in our homes.

In fact, our sun “provides enough energy in one minute to supply the world’s energy needs for one year. In one day, it provides more energy than our current population would consume in 27 years,” according to Alternative Energy ([www.altenergy.org/renewables/solar.html](http://www.altenergy.org/renewables/solar.html)).

While we do not yet have the technology to provide our planet with all our energy needs through the sun’s rays, humankind has made great strides in generating very effective methods of using solar energy. Drying clothing on clotheslines and drying food for preservation are just a couple of ways in which civilizations have been incorporating solar thermal energy for generations.

Depending on the household, heating water accounts for approximately 25 percent of electric use in homes. With this in mind, there is considerable potential benefit in targeting energy use here. Insulating existing water heaters or replacing old ones with more efficient models are excellent ways of improving home energy efficiency. Additionally, a solar water heater is a very good option to consider.

Residential solar hot water systems are not as complex as you might think.

A typical installation consists of three essential components: the solar collector, the storage tank and the heat exchanger. The collectors are most often mounted on the roof with a south-facing orientation. Their function is to absorb heat from the sun, which will be transferred to the home’s water supply by way of a fluid that passes through the panels. The storage tank holds the water that will be used in the home. The heat exchanger’s function is to share the heat from the heat transfer fluid in the panel to the water in the storage tank. The exchanger is usually made of two closed loop pipes, one containing the heat transfer fluid from the panels, and the other containing the domestic water to be heated that will be used in the home from the storage tank. These two pipes pass in very close proximity, causing the domestic-use water to be heated by the transfer fluid from the panels.

In systems that do not have an external heat exchanger, the heat-transfer fluid pipe runs directly through the storage tank to heat the domestic water. Most solar hot water systems have a backup energy source, such as electricity or gas, so that homeowners will have hot water no matter what the weather may be.

While the cost of installing a solar hot water system is considerably more than a conventional system, tax credits from the state of North Carolina (35 percent) and the federal government (30 percent) bring down the cost dramatically.

Many experts consider solar hot water to have the shortest payback period of most common renewable energy systems found in homes — and as energy prices rise, the payback period lessens.

Beyond the payback period is real and significant savings. The value of using less energy impacts us personally, locally, nationally and globally. We all benefit from lower utility bills, cleaner air to breathe, energy independence and a more sustainable planet.