

## SOLAR POWER: MORE AFFORDABLE THAN YOU THINK<sup>1</sup>

Leah Zerbe<sup>©</sup>

If you like the idea of getting your power from the sun instead of the electric company, but the cost of lining your rooftop with solar panels dims your enthusiasm, it's time for you to reassess. Dipping solar module prices, coupled with state, federal, and utility rebates, make solar systems more affordable than ever. There's still a significant up-front cost, but you'll see a return of investment in just a few years. (You'll also be putting fewer greenhouse gases and pollutants into the air by drawing less power from coal-fired and other conventional power plants.)

But, you say, you need to keep a close eye on your budget (these days, who doesn't?). Solar power may still be within your grasp. It just might not be in the form of those rooftop photovoltaic panels you've always envisioned. "In most parts of the country, and especially the southern tier—the Sunbelt states—the best bang for the buck is solar water heating," explains Seth Masia, deputy editor of *SOLAR TODAY* magazine. Solar electric systems can run about US\$18,000, whereas solar hot-water heating systems cost around US\$3,000, depending on the typical system (and after rebates).



Solar hot water systems use a thermos-like setup to catch the energy of the sun. (Photo courtesy of Earth Energy Innovations.)

**THE DETAILS:** Think of solar hot-water systems as a way to use the sun for some, rather than all, of your electricity needs. The systems allow you to save money on gas or electricity costs associated with heating your home's water, so you can take showers and wash your clothing and dishes knowing that big star in the sky did most of the hard heating work. (If you're building a new construction or putting in new flooring, you may also want to investigate using solar-heated hot water to create radiant floor heating.)

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There are different types of solar hot-water systems. The cheapest and simplest type, a single-circuit system, works best in the southern U.S., especially in places like Florida, Arizona, Southern California, and Hawaii, where it never freezes at night. In this system, cold municipal water flows into the home's rooftop collector, which features a coating to heat the water fast using (free) energy from the sun. From there, the hot water moves on to a conventional storage tank.

There's also the thermosiphon system, popular in warm places like Florida and Hawaii. Water in the collector rises through tubes and into the top of a storage tank. When this happens, colder water enters the bottom of the collector, where it can be warmed. For this system, the storage tank is on top of the roof, though, so make sure your roof can handle the load before installing.

Not lucky enough to live in a sunny, mild climate? The evacuated-tube system is more expensive, but it works well even in places that experience cold, snowy winters. Masia describes this system as like a big thermos bottle without an outside cover. Inside its long, tempered-glass tubes are smaller copper tubes surrounded by a vacuum, allowing solar radiation to boil water and create energy even at low winter temperatures.

**WHAT IT MEANS:** For many homeowners, solar hot water heating is a relatively affordable way to cut down on energy costs. And believe it or not, your grandparents or great-grandparents may have used solar hot water. "It's a really old technology commercialized in the 1890s. Many homes in the 1910s and '20s had solar water heating," says Masia.

Grrrr...then the federal government stepped in and subsidized natural gas, so people found it cheaper to install gas-fired water heaters. That's too bad because now natural gas prices are very volatile. Not to mention, drilling for it via natural gas fracking is threatening the nation's water supply.

Here's how you can cash in on solar today:

**Check DSIRE for deals.** Whether you're interested in solar hot water, solar electricity, or both, the online Database of State Incentives for Renewables & Efficiency, commonly referred to as DSIRE, allows you to scan for deals on solar and other types of clean-energy systems being offered on federal and state levels. Most solar installers will help you navigate this part of the system, but it doesn't hurt to check it out yourself to know what you qualify for. You can also contact your State Solar Energy Society chapter for guidance and advice on cost-effective solar options. For more information about installing a solar system, read *SOLAR TODAY's* Everything You Need to Know to Get Started.

**Find a way to afford solar panels.** There's no doubt solar hot-water heaters are super-practical and a great first step when you're enter the world of solar energy, but dang, those rooftop photovoltaic system are so impressive! No worries. You might be able to afford them, too. If you're in your forever house, it pays to invest in photovoltaic solar electric, particular if you live in a place where electricity is more expensive, such as New Jersey or Hawaii. "In Hawaii, where electricity is 25 cents per kilowatt hour and sun shines bright year-round, you almost can't afford not to do it," Masia says.

He says for a typical household, a system of about 3 to 5 kilowatts in size is sufficient. "After state and/or utility incentives or rebates, you're spending in the neighborhood of US\$10,000 to US\$18,000 on a system that would meet the electric needs of a typical household." (Just keep in mind that you usually have to pay the cost up front, and it could take several months to receive

your rebate cheque.) "The major myth is that it's very expensive," Masia says. Nowadays, all kinds of financing options can pretty much eliminate up-front costs.

If you're buying a new house, build the costs of solar power into the mortgage. If you're only going to live in your home for a few years, consider a "power purchase agreement," which means you're basically giving a company permission to put solar panels on your roof. You pay nothing, and are locked in to buying your electricity at a fixed rate, while electricity costs will undoubtedly rise for everyone else. Power purchase agreements generally last 20 years. When you sell your house, the agreement is transferred to the new homeowners. (If electricity prices skyrocket, as expected, this could actually be a selling point.)

**Invest in cheaper game changers.** Whether or not you're investing in solar hot water or solar photovoltaic panels, it makes major sense to address energy vampires, too. Take a plugged-in TV that slurps as much as five watts even when it's turned off. Unplug it, or plug it into a power strip that can be switched off when you're not in couch potato mode. Masia says if your refrigerator is 15 years old or older, your single best investment for energy reduction is to replace it with an Energy Star model, which could pay for itself in five to seven years. Aside from that, install low-flow showerheads to reduce the amount of hot water you use, try our easy home weatherization tips, and use other efficiency-improving methods to save energy at home, which will not only save you money, but also use less power.