

## A Guide to Lighting your Home with Solar Energy

Jan 07, 2014 by Wendy Weinert



Solar energy is fast becoming the most cost-effective and realistic alternative to conventional energy production. In residential capacities, solar energy systems harness energy and heat from the sun, converting it in order to power your lights, hot water heater, appliances, and more. There are numerous types of solar energy systems, and the benefits of incorporating this environmentally friendly resource into your home are astonishing. From reducing the impact that you have on the environment to cutting your utility bills and upping your resale value, solar energy is truly a worthwhile investment.

Solar energy utilizes the natural resources of the sun to generate heat and electricity. Systems come in various sizes, from just a few panels to light your home to larger systems that essentially take you off of the grid. Most residential applications work via photovoltaic cells, which absorb light and then transfer it to a semiconductor, freeing up electrons and generating a current. The current is then fed into your home, powering everything from your table lamp to major appliances. It can also be fed directly back into the power system you're already hooked up to, sending it to the utility company as an energy surplus. Solar energy is considered an intermittent source, simply because cloud cover eliminates the availability of sunlight, halting the process. However, residential solar energy systems often come equipped with a storage feature, creating a back-up when the weather doesn't cooperate.

There are numerous types of solar energy systems, and the most common one used for

residential purposes is solar photovoltaic (PV), where semiconductors produce electricity when struck by sunlight. Solar heating utilizes solar collectors that capture heat from the sun, concentrating it in water pipes and ventilation systems before evenly distributing it into the water heater or throughout the home. A newer version of solar energy utilizes the principles of solar heating to generate electricity. The heat is captured from the sun and then converted into energy once fed through a generator. This generator then runs the electricity directly into your home. This form is less common in residential capacities; however, it is being studied and tested for large-scale applications, such as apartment buildings, commercial properties, and the like.

Perhaps the greatest benefit of utilizing solar energy to light and heat your home is the effect, or lack of effect, that it has on the environment. Solar energy creates electricity without any pollution, outside of panel and material production. Each megawatt-hour of power generated by solar energy eliminates the emission of over 1,300 pounds of carbon dioxide, 5 pounds of sulfur dioxide, and 2 pounds of nitrogen oxide, all of which cause damage to the atmosphere and, subsequently, natural resources, plant life, and animal life. In addition, it also eliminates the need for nuclear energy; although often coined as a clean alternative to coal, nuclear energy is incredibly volatile and potentially damaging to the environment.

The amount of money saved by converting even in part to solar energy is astonishing. However, savings depend on your location and the size of the system you install. A properly installed and sized PV system can cut utility bills by up to 70%. In addition to this, solar systems that feed surplus energy back to the utility company also save you money. In many states, the utility company only requires payment for the net amount of electricity used, and if you use less than you feed back to the utility company, they'll pay you the difference. This, coupled the tax credits and rebates offered by states and the federal government, make solar energy an incredibly cost-effective and rewarding investment.

A professionally installed home solar energy system also adds value to your home. Despite the initial expense of installation, most solar energy systems pay for themselves within 10 years in utility savings alone. And when it comes to home value, solar panels can add well over \$20,000 to the resale price of your property. When coupled with tax credits used for installation, a solar energy system recoups nearly 97% of its investment during resale. By contrast, upgrading a kitchen typically only brings in a 60% payback on investment.

The type and style of solar energy best for your home will vary drastically by how much power you're looking to generate, the specific architectural style of your home, and your lifestyle's specific energy requirements. For the best results, take a close look at your home's energy

needs and work with licensed, reputable contractors and panel suppliers to install a system that meets those needs exactly. Whether you're simply looking to light your home or want to install a system that will take on the bulk of your electrical needs, there's a solar energy system for you.

These pages provide additional information on system types, sizing, costs, benefits, and more!

- [Getting Started: What You Need to Know](#)
- [A Primer for Homeowners](#)
- [Solar Energy 101](#)
- [Renewable Energy For Your Home](#)
- [Passive Solar Home Design](#)
- [Solar System Site Assessment Calculator](#)
- [Tips for Selecting a System](#)
- [Determining Panel Amounts](#)
- [A Guide to Residential Solar Energy](#)
- [Basic Facts About Home Systems](#)
- [Saving Money With Solar Panels](#)

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