

## GREEN BUILDING: What homeowners need to know to go solar

By Erika Schneider  
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Solar energy is experiencing tremendous growth as our society responds to the challenge of meeting energy needs in more sustainable ways. Global warming and other environmental and social concerns, along with rising energy costs, are causing many to look toward the sun to power their lives.

Driving this shift are several developments within the solar industry, including advances in technology, decreased cost because of greater manufacturing and the development of interconnection rules for allowing Renewable Energy systems to sell power to the electric grid. In addition, tax incentives that encourage renewable energy have been expanded. As a result, many homeowners are discovering that solar electric, or photovoltaic, systems are a wise investment option.

Photovoltaic modules, composed of solar cells that contain a silicon semiconductor, convert sunlight directly into electrical current. The most efficient type is the traditional crystalline module, which can either be roof-mounted or placed in an open area in the yard. Once properly installed, these modules require very little maintenance and most models carry 20-year warranties or more. Newer on the market, amorphous modules can take the form of laminates, flexible modules, and even building-integrated shingles, but they produce much less energy per area than crystalline modules. One advantage they do have is that they can perform better in partial shading and low-light conditions.

Solar systems can be designed either with or without a battery. Battery-based systems are used for supplying the electrical demands for a stand-alone, or off-grid, system when the site isn't served by an electrical utility. They also can be used to supplement grid power and provide backup power during times of grid failure. These systems, while more expensive than batteryless system, have the advantage of offering energy independence and security.

Batteryless systems require an interconnection with the local utility and allow for the power generated by the system to be used on site or "sold" to the local utility. A production rate of 3 cents to 4 cents per kilowatt hour is paid by the utility. In addition, N.C. Green Power, whose mission is to support renewable energy, is paying producers of solar energy an additional 18 cents per kilowatt hour.

Tax credits for solar systems also offer considerable financial incentives. In North Carolina, solar electric systems qualify for a renewable energy tax credit of 35 percent, with residential claims being capped at \$10,500 and commercial applications at \$2.5 million. An additional 30 percent can be potentially reclaimed through the federal tax credit, with a residential cap of \$2,000 and no commercial cap. These incentives can be reviewed at the comprehensive Web site [www.dsireusa.org](http://www.dsireusa.org).

The first step in becoming a solar energy producer is to enlist a professional contractor to perform a site visit to quantify the solar resources and identify specifics of the design. A solar professional should be able to develop an estimate for the system that will best meet your needs that contains costing for the products and an

installation that will meet Underwriters Laboratories standards and state and federal codes. They should also be able to assist with a financial analysis of the system.

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