Solar Envy

Utilizing solar energy to power your home

BY **PAUL KELLEY**

Now that the sun is finally out, you may be considering the idea of solar energy for your home. Here's a solar primer to help with the decision-making.

Let's start by looking at the home's current energy budget, keeping in mind that before determining what size photovoltaic (PV) system you need, you should reduce as much as possible the current amount of energy used to minimize the size of the system. Replace outdated light fixtures or relamp with CFCs. Add insulation and passive shading to the structure, and update air conditioning with a high-efficiency unit.

The next step is to look at orientation and location for solar panels. Ideally, panels should be placed in a southern/southwestern orientation to take advantage of as much direct sunlight as possible. Consider sun angles in both warmer and cooler months, as the system will still generate electricity during the winter. Trees come into play, and can block needed sunlight in all seasons. Adjacent structures such as detached garages and carports — even ground-mounted PV systems — can function as good locations for panels, but keep in mind that the farther the panel location is from the system's power inverter, the more energy is lost.

Flat and low-pitched roofs are ideal for PV panel placement, as they face skyward and conceal the panels from street view. The added weight of the panels to the roof will require the installer/engineer to analyze the additional loading; over-spanned roofs may not support the added panel weight. If you live in a community that has CC&Rs or other building restrictions, check to see what regulations are in place regarding system installation and visibility: You may need to provide illustrations to the local design-review board for pre-approval.

With current technology, PV solar requires a large array of panels to offset the energy used by your home, which is why it is so important to reduce the energy consumption first. Systems are usually designed toward a cost-neutral usage, which means the amount of expensive energy (summer afternoon days) sold or put back into the grid offsets, in cost, the amount of inexpensive energy (cooler evenings) purchased; ideally, you would pay nothing for actual energy used. Remember that federal tax rebates are still in place until 2016, and there are financial options, such as leasing, available.

A new solar photovoltaic system may wipe out your electricity bill, give you green bragging rights and make you the envy of your neighbors.

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