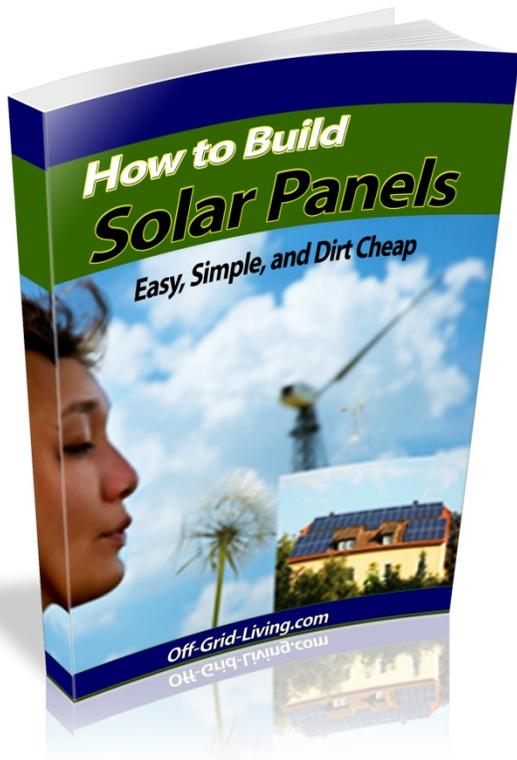


Off-Grid-Living

In An Urban and Suburban World



Lesson #6 ... How Small Solar Systems Work

By David Sieg and Information
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Before attempting to build a solar system for your entire house, take my course "Home Energy Made Easy" Go here: <http://Off-Grid-Living.com> I'll give it to you for free for being a member of this course. Understanding the concepts in that course will save \$1000's of dollars when you go to build your system.

This is but one small section of a complete action plan for building solar panels dirt cheap. Which is one small section of a course on going off the grid in Urban/Suburban America. You can learn how to

- Grow your own food year around, no matter where you live.
- Slash your energy and living expenses by 50% or more.
- Create your own fuel
- Finding economical shelter
- Alternative methods of (Legally) making money
- How to live anonymously

Check out <http://Off-Grid-Living.com>

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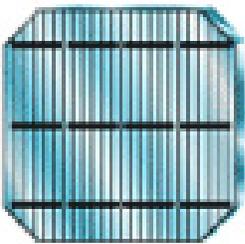
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Introduction

The most important thing to take away from this lesson is..

Once you understand the options available to you you'll in a much better position to make sound decisions.

Solar electric systems, also known as photovoltaic, PV systems for short, convert sunlight into electricity. OK, you already knew that.



Cell

Solar cells—are the basic building blocks of a PV system—they are made out of semiconductor materials. When sunlight is absorbed by these materials, the solar energy knocks electrons loose from their atoms. This phenomenon is called the "photoelectric effect." These free electrons then travel into a circuit built into the solar cell to form electrical current. Only sunlight of certain wavelengths will work efficiently to create electricity. PV systems can still produce electricity on cloudy days, but

not as much as on a sunny day.

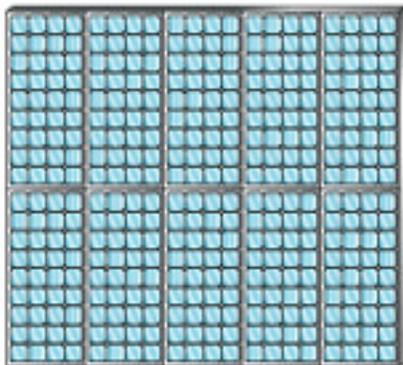
The basic PV or solar cell typically produces only a small amount of power. To produce more power, more solar cells can be interconnected to form modules. PV modules range in output from 10 to 300 watts.



Module

If more power is needed, several modules can be installed together on a building or at ground-level in a rack to form a PV array.

PV arrays can be mounted at a fixed angle facing south, or they can be mounted on a tracking device that follows the sun, allowing them to capture the most sunlight over the course of a day.



Array

Because of their modularity, PV systems can be designed to meet any electrical requirement, no matter how large or how small. You also can connect them to an electric distribution system (grid-connected), or they can stand alone (off-grid).

How To Build Solar Panels

A typical small solar electric, or photovoltaic (PV), system consists of these components:

Solar cells

Modules or panels (which consist of solar cells)

Arrays (which consist of modules)

Balance-of-system parts

A typical small solar electric system usually includes the following balance-of-system components:

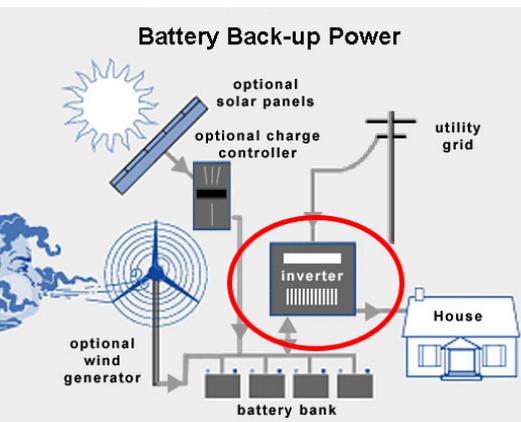
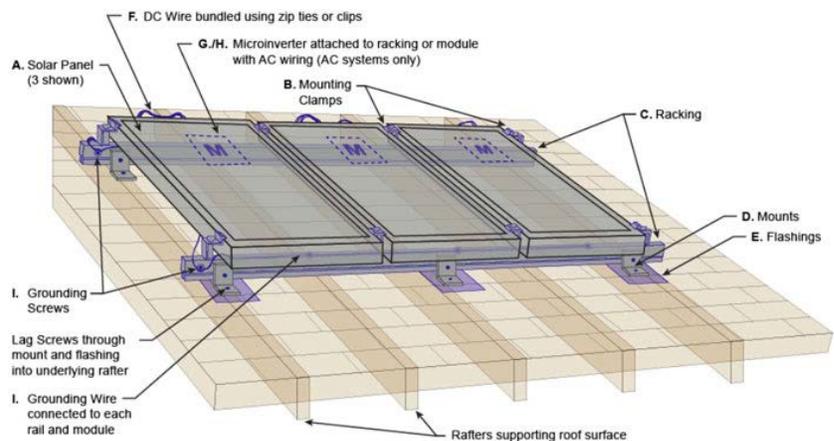
Mounting racks and hardware for the panels

Wiring for electrical connections

Power conditioning equipment, such as an inverter

Batteries for electricity storage (optional).

Stand-by gasoline electric generator. (Optional)



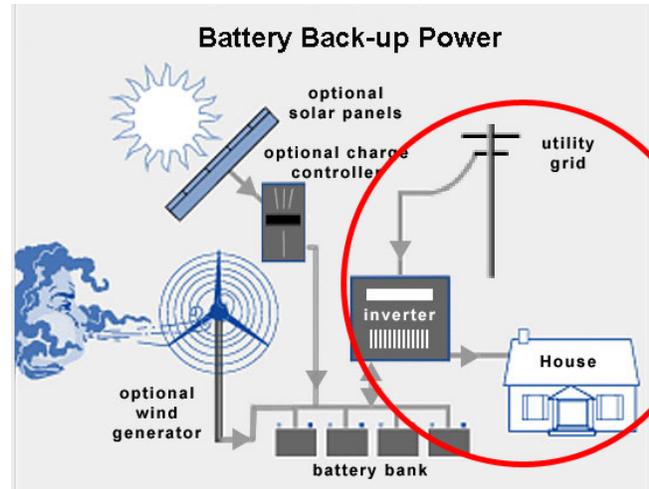
A PV system can be a stand-alone, or "off-grid" system, or connected or "tied" to the utility grid. If tied to the utility grid, it will have these components:

- One or more PV modules, which are connected to an inverter
- The inverter, which converts the system's direct-current (DC) electricity

to alternating current (AC)

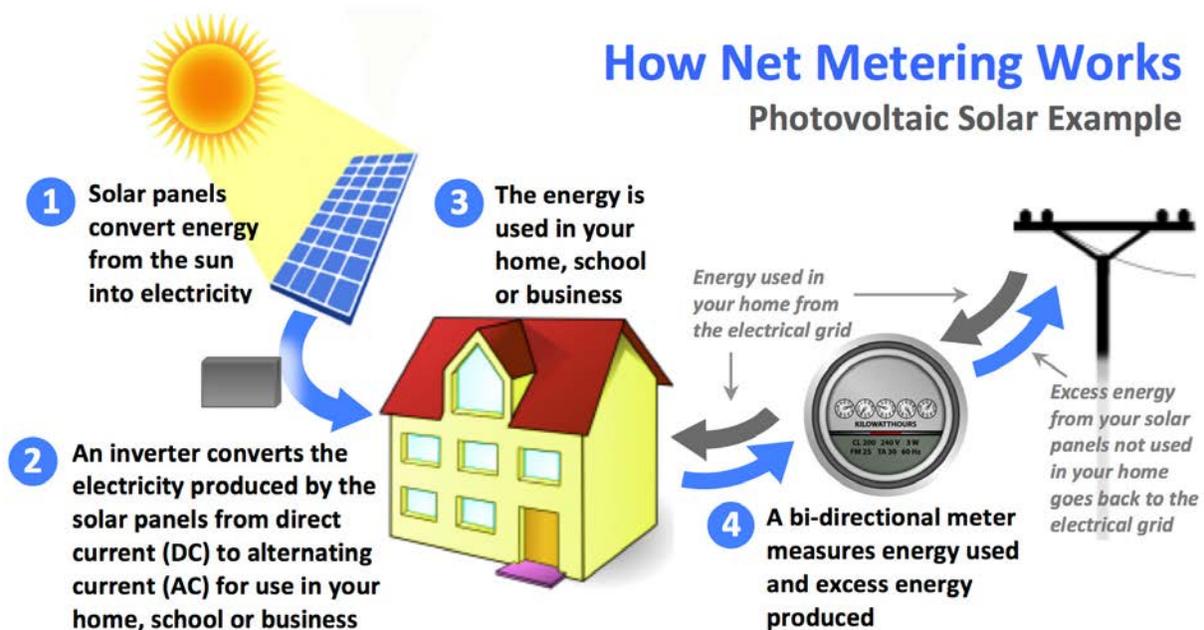
How To Build Solar Panels

- Batteries (optional) to provide energy storage or backup power in case of a power interruption or outage on the grid. AC electricity is compatible with the utility grid. It powers our lights, appliances, computers, and televisions.



What Is Net Metering?

Net metering is a billing mechanism that credits solar energy system owners for the electricity they add to the grid. For example, if a residential customer has a PV system on the home's rooftop, it may generate more electricity than the home uses during daylight hours.



If the home is net-metered, the electricity meter will run backwards to provide a credit against what electricity is consumed at night or other periods where the home's electricity use exceeds the system's output. Customers are only billed for their "net" energy use. On average, only 20-40% of a solar energy system's output ever goes into the grid.

How To Build Solar Panels

PS...Don't forget you can get personalized coaching at Off-Grid-Living.com/
For some this is the ideal way to get hands on experience as well as personal attention needed to make this work for you.

Coming Up Next ...

Lesson #7: "Considering a Small Solar System"

In the next lesson we'll be the things you should be thinking about as well as practical decisions you make for your own situation.