



SIZING A PHOTOVOLTAIC (PV) SYSTEM

There are several steps involved when designing a PV system. The first step is to calculate the amount of energy required on a daily basis. There are several ways to estimate the energy used. One is from your utility invoice; it shows actual usage over a 12-month period. The alternative is to add up the individual appliances and lights that will be utilizing the system (loads), most appliances have an annual energy usage available, lighting would need to be calculated manually.

Once the daily load is calculated the size of the inverter and the batteries required can be calculated. Batteries can be 6V, 12V, 24V or 48V. The battery voltage should match the voltage of the PV panel, i.e. 12 V panel should utilize 12V battery. Two, 6 volt batteries can be utilized to make a 12V system. The inverter size will match the wattage of the system, (1000 w, 5000 w etc.)

The size of the array of PV panels is based on average amp hours, hours of sun per day and the amperage of the panels.

The controller is a very important part of the system; it protects the batteries from overcharging. Some controllers have other features including low voltage disconnect and alarms to indicate low battery voltage.

Once the system size is calculated the gauge of the electrical wire must be determined. Several factors must be considered, including distance of wire run and Electrical Safety Association requirements.

This is a basic outline of the steps to size and price a PV system. Once the system size is determined a site visit would be required to ensure the install area is adequate for the PV system.