

Some Basics



Free Energy Isn't Totally Free

The concept of free energy means different things to different people. The truth of the matter is that Solar Energy isn't totally free. There is a cost for the purchase, installation, and maintenance of the equipment necessary to gather and harvest the abundant energy of the sun. It is the energy that is free. There is a cost for the purchase, installation and maintenance.

Counting The Cost

In order to understand the cost, you must understand the language of solar energy. Power is talked about in terms of Watts (a single unit of electric 'power') and kilowatts (a thousand units of electric 'power'). There are other terms you will hear about such as Volts and Amps, but these have little to do with costing a solar electric system. The next piece of information to understand is that solar energy is generated every day, so a solar system is constructed to provide all of the energy that will be used in a single day. Since the days are longer and shorter depending on the season, and since not all days are sunny and clear, calculations have been made to provide the average daily generating time in any particular area, and this calculation is called a "solar day". Having these small bits of information makes it easier to understand the following:

Average Daily Household Energy Usage	2.8 – 3.2 kW/day
Average Daily Office Energy Usage (15,000 sqft)	10 – 17 kW/day
Average Solar Day in So. Cal. Inland	5.6 – 7.2 h/day
Average Cost for Solar Electric Installations	\$6- \$8/Watt
Average Cost for Physical Installation of Equipment	1.2% of total equip\$

To move to the bottom line **average** array costs for equipment and installation:

<i>250kW array</i>	<i>\$1.6MM</i>	<i>400kW array</i>	<i>\$2.5MM</i>
<i>300kW array</i>	<i>\$1.9MM</i>	<i>500 kW array</i>	<i>\$3.0MM</i>

This seems to be a daunting amount of money until you apply various grants and rebates that are available (but must be applied for on a timely basis). By applying the various rebates and grants to the cost of installation, you can arrive at the **effective cost** of the installed array. Consider also that the typical life of a solar array is 30 years; so when you apply this on a daily basis, the cost for a Tribal solar array becomes extremely cost effective.