

System Sizing Worksheet

Use Wholesale Solar's easy worksheet to figure out what a professionally installed solar electric system might cost. Grab last year's electricity bills and your calculator, and follow these easy steps.

1. First, figure the daily output needed from your PV system:

$$\begin{aligned} & \text{Average Monthly Electricity Use} \quad \underline{\hspace{2cm}} \text{ KWH} \\ & \text{(Add the monthly totals for several bills and divide by the number of bills.)} \\ & \quad \times 1,000 \text{ (converts KWH to Watt-Hours)} = \underline{\hspace{2cm}} \text{ WH} \\ & \quad \times \underline{\hspace{1cm}} \% \text{ * of Monthly Electrical Use from PVs} = \underline{\hspace{2cm}} \text{ WH} \\ & \hspace{15em} \text{divided by 30 days} \\ & \quad = \text{Daily PV Output Needed} \quad \underline{\hspace{2cm}} \text{ WH} \end{aligned}$$

(*This is where you need to decide if you are going to have an independent/stand alone system which produces 100% of your power ...or if you are going to have a grid-intertied system which will allow you to pull part of your power from the grid. For example, if you install a grid-intertied system which will supply 25% of your electrical needs, you will need enough solar to produce 25% of your electricity and you would multiply by 0.25) **TIP: Run this worksheet as if you will produce 100% of your electrical needs, then scale back to fit your budget.**

2. Then calculate the minimum system size (in watts):

$$\begin{aligned} & \text{Daily PV Output Needed (from Step 1)} \quad \underline{\hspace{2cm}} \text{ WH} \\ & \text{Divided by Average Peak Sun Hours (} \underline{\hspace{1cm}} \text{ hrs) Per Day} = \underline{\hspace{2cm}} \text{ W} \\ & \hspace{10em} \text{divided by 0.7 or .85 for System Efficiency Factor} \\ & \text{(}.7 \text{ for independent system with batteries or } .85 \text{ for more efficient grid-tied system)} \\ & \quad = \text{Minimum System Size} \quad \underline{\hspace{2cm}} \text{ W} \end{aligned}$$

3. Next, determine the number of PV modules you'll need:

$$\begin{aligned} & \text{Minimum System Size (from Step 2)} \quad \underline{\hspace{2cm}} \text{ W} \\ & \text{divided by Wattage Rating (} \underline{\hspace{1cm}} \text{ W) of Chosen Module} \\ & \quad = \text{Number of Modules Required} \quad \underline{\hspace{2cm}} \text{ Modules} \end{aligned}$$

This is the size "solar array" or group of solar panels you will need.

4. Now you can figure the size of the system:

$$\begin{aligned} & \text{Number of Modules Required (from Step 3; round up)} \quad \underline{\hspace{2cm}} \text{ Modules} \\ & \quad \times \text{Wattage Rating (} \underline{\hspace{1cm}} \text{ W) of Chosen Module (also from Step 3)} \\ & \quad = \text{System Size (in Watts)} \quad \underline{\hspace{2cm}} \text{ W} \end{aligned}$$

Wholesale Solar
wholesalesolar.com
1 800 472-1142