

Water Pumps



Solar powered water pumping systems are currently being used to irrigate crops, water thirsty livestock and provide potable water, and should be considered for replacing generators and power line extensions. Unlike generator powered systems, solar water pumping systems do not require trips for refueling or constant maintenance. Since solar water pumping systems produce the most water when it is sunny and hot, they are a natural power solution. The pump you use will depend on your application and the water source. A surface pump is a more economical solution if you are pumping from a water source close to the surface. These pumps can push water a great distance or pressurize it for domestic water use. Submersible pumps can deliver water from as far as 1200 feet. A common application is to use a submersible pump operating only during daylight hours which pumps water into a storage tank. A separate system with a booster pump operating from a battery bank can pressurize the water and deliver the water day or night.

There are several important factors you need to specify to choose the optimum solar pumping system design. The worksheet below will help you compile the information you need. Contact your dealer once you have this worksheet filled out for a price quote.

SIZING YOUR SOLAR PUMPING SYSTEM WORKSHEET

Type of Water Source (Check one): Stream, Lake or Pond Cistern or Dug Well Drilled/Deep Well
 Other _____ Season of operation (months) _____
 Depth to Water: _____ Ft. (Be sure to account for variations) Distance of Float Switch Cable _____
 Estimated Well Capacity: _____ GPM Amount of Water Required: _____ GPD (Winter) _____ GPD (Spring)
 Well Inside Diameter (If applicable) _____ in. _____ GPD (Summer) _____ GPD (Fall)
 Type of Application (Check one): Domestic Water Livestock Irrigation Other _____
 Vertical Lift Required From Water Surface to Outlet: _____ ft. Type of Storage: Above Ground Other _____
 Geographical Location of System _____ Temperature: _____ °F Min. _____ °F Max
 Elevation Above Sea Level: _____ Ft. Distance from Solar Array to Pump: _____ ft.
 Options: (please check if you would like one of the following): Float Switch Generator Backup

General Solar Pumping Information

Flow Rates

GPD - Gallons per Day (To estimate GPD, multiply GPH by peak sun hours for location)
 GPH - Gallons per Hour (To estimate GPH, multiply GPM by 60 min./hour)
 nGPM - Gallons per Minute)

Pump Performance Vs. Solar Array Output

As voltage varies, flow rate will vary proportionally
 Average stays nearly constant
 Watts = Volts x Amps

Conversion Factors

Feet of Lift to PSIG - Divide Feet by 2.31
 US Gallons to Liters - Multiply Gallons by 3.785
 Feet to Meters - Divide Feet by 3.28

Consumption Estimates

People—10-100 GPD per person for all purposes
 Large Livestock (horses, cattle) - 10 GPD per animal
 Dairy Cattle - 35 GPD per animal
 Small Livestock (sheep, hogs, etc.) - 2-4 GPD per animal
 100 Chickens - 4 GPD