

What is Solar Pumping?

Solar water pumps are usually used to replace on-demand pumps such as petrol or mains pumps - saving on bills and time!

The essence of solar water pumping is utilising the sun when it's available to pump water higher than the water source, so that gravity can feed things when the sun isn't out.

A solar pump is different to an on-demand pump because it is powered directly by the solar panels, rather than drawing from batteries. In this way, the pump will only work when there is adequate sun, rather than being able to run when you choose.

This means to optimise your system you will need adequate storage. You can imagine your holding tanks are like batteries storing power for later use. You want to make sure you have enough storage that you can get through the periods when the pump isn't running – both overnight and over several days when there's no sun. Essentially, you need to make sure you get more water on average up the hill than you use. It's much cheaper to store water in a tank than to store power in batteries!

[Our solar water pump kits](#) contain solar panels, a charge controller, a pump, and the connections between these items. You can then run these into your water source and holding tank, providing your own float switch and valve.



What can you use a solar water pump kit like this for?

Quite often you will see water needing to be pumped from creeks, dams, springs, or even rainwater tanks. Conventionally, people have used petrol powered pumps, or mains power pumps, and these both have their drawbacks: Petrol pumps cost time and money in needing to move them around, refill them, and paying for petrol, while mains pumps cost money in continued power bills or big costs to get power to remote locations where the water is.

A [solar water pump solution](#) is ideal for pumping water in the situations where petrol and mains aren't practical, because you need it somewhere without access to power and don't want the added costs, or when you don't have capacity in your existing solar power set up. Solar is maintenance free and can work anywhere, and our kits are competitively priced to be a more cost-effective solution than mains power (even without the extra connection cost!)

The simplicity of a set up like this means it can be used for many different situations. Most commonly, these are used by people living off grid looking to support their household water usage, and farmers needing to move water around to service stock.

How can you best take advantage of a solar water pump solution?

Using a solar pump to move water from a natural source or a rainwater tank up to a header tank to gravity feed either your household supply or the water needs around a farm such as cattle troughs.

GridFree has designed a [solar water pump system](#) to automatically pump water whenever the sun is bright enough to produce power - so long as the source is not empty, and the destination is not full. For example, when the sun shines bright enough on the solar panels to produce power, water is pumped from a pond or rainwater tank into a water tank up the hill, until the float valve in the higher tank shuts off because it is full. The water will stop pumping when the sun is not bright enough, or the water source is not full enough. When the sun comes back out, the pump will restart when the higher tank is no longer full, provided the source is not empty.

I already have solar power for my house, why do I need a separate solar water pump kit?

Capacity and location are the main reasons why a separate system might be best for you. As with other pumping solutions, this kit allows you to put it anywhere, so it's not tethered to house

power. It's also ideal if you don't have any additional capacity in your existing solar power set up. Having these two systems independent also means that your water pumping isn't affected by you running out of power in the house, and it's a lot cheaper to purchase additional storage for water in a header tank than power in solar batteries.

How do I choose the right kit for me?

To figure out if one of our kits is right for you, you need to compare your average water needs to what the system will provide on average. The first thing you need to do is understand your specific installation. Specifically what pressure will the pump be operating at under full flow.

One component of this pressure is the static pressure head that is usually the vertical offset from your reservoir level to the level of your header tank (in meters). The second part of this is the additional pressure created by friction and turbulence when the pipe is flowing called dynamic head. This can be hard to calculate but as long as the pipe run is short and your pipe diameter is not too small, it will not be significant. For pipe runs longer than 100m or pipe diameters below 20mm please get in touch and we can help you calculate your losses. For lengths less than 100m usually it is adequate to add 10m of pressure head as a buffer to your static pressure head.

Once you have a pressure estimate for what your pump will run at, you can compare it to the pump performance chart on the kit product page. This will



allow you to see how much water the pump can move with full sun.

In winter you can expect around 1 - 2 hours of pumping consistently, and in summer 3 - 5. If the result of this amount of pumping is enough for your average summer and winter needs, the kit should be suitable.

If you have any questions at all, feel free to [get in touch!](#) We'd love to talk to you.

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Learn More:

To learn more about our solar pumping solutions, check out the kit here:

<https://gridfree.store/products/back-gully-water-pump-kit>

To learn more about off-gridding, especially solar, make sure you check out our knowledge base at:

<https://gridfree.store/blogs/how-to-articles/>

Check out solar power options, from individual components to complete kits, on our website:

<https://gridfree.store/collections/complete-off-the-grid-solar-kits>

