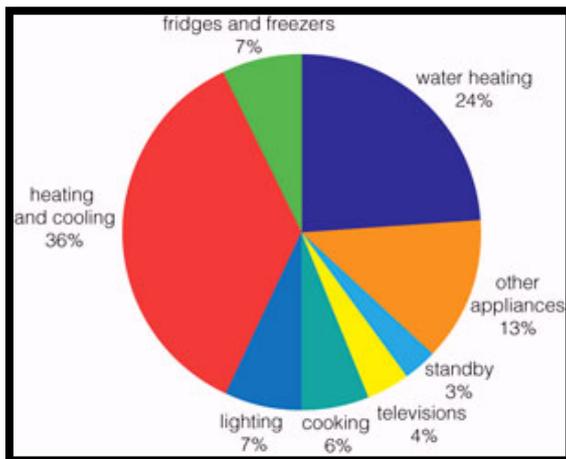


How Solar Hot Water works, is it Worth It ?

Upgrading from Electric Storage water heating:

If you currently have an electric storage hot water system, your household energy consumption will probably break down like this:



You can see that around 25% of your electricity bill is used to heat your water! **Solar will save you most of that electricity – and typically shave \$500-\$700 per year off your bill.**

The other good news is that if you currently use electric storage heating then you should qualify for the max government rebates. If you currently have an electric storage water heater.

Solar Hot Water is probably one of the best investments you can make in your home's energy efficiency. Payback will be 4-5 years which is an ROI of about 20%.

Types Of Solar Hot Water

Solar Hot Water Panel Based Systems

The first type – solar panel based systems – use a flat solar collector that is placed on your roof which absorbs the sun's rays and transfers the heat from those sunrays directly to your household water which is pumped through those panels.

The water heats up as the sun hits it. When the sun isn't shining, you obviously can't heat the water with solar energy, so you need to have a backup fuel source, usually gas

or electricity. Of course to avoid using this electricity or gas you store the hot water in a well-insulated tank.

Generally these systems can provide from half to all of your home's hot water depending on where you live and how efficient your solar hot water panels are. In Hobart, you'll get about 50% of your water heated by the sun.

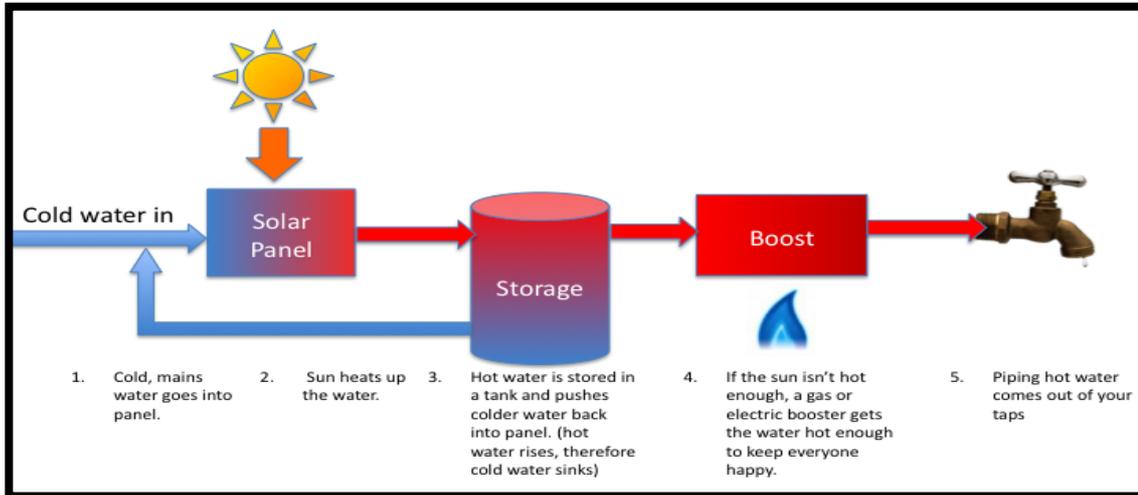
In Queensland you should get 100%. Here's a typical panel based system. This one has its hot water tank integrated with the panels, called a syphon model



Solar Hot Water diagram

Solar Panel Hot Water Systems

Here's a very simplified diagram that explains the 3 main components of any solar panel based solar hot water system: The panel, the storage tank and the boost.



1. Cold Water at mains pressure enters the solar panel. The panel is designed to absorb the sun's heat and transfer it to the water as efficiently as possible. German Tech panels absorb so much more heat, trust those clever Germans.

2. The sun heats up the water, how much by depends on the strength of the sun at that moment in time.

3. The hot water moves to a hot water storage tank. As the hot water comes in it pushes colder water to the bottom of the tank (because hot water rises, so cold water must drop) where its only option is to go back into the solar panel to get hotter. As this cycle repeats the water in the tank will get hotter and hotter until it reaches the system's design temperature.

4. If the sun isn't strong enough to get the water in the tank to the desired temperature (usually 55 to 60 degrees Celsius) then an electric or gas booster will kick in to add the extra heat required.

Solar hot water panel flat plate

Flat Plate Collectors

These are the most widely used type of collector for domestic solar water heating.



Flat plate collectors are shallow rectangular boxes with glass lids and usually aluminium for the body. Typically 1-1.5 meters wide by 2-2.5 metres long. They have copper tubes inside in which water circulates, cold water then becoming hot water before returning to the tank.

Solar hot water Tubes – for frost areas

Evacuated Glass Tube Collector

Whilst flat plate collectors are all pretty similar in design, construction and



performance, evacuated glass tubes can vary widely in their design and performance. Evacuated Tube Collectors collect the heat through a number of annealed glass tubes that each have their own heat-absorbing plate inside. There are loads of different designs, but the basic principle is the same for all designs. Basically each tube is like a

little greenhouse that traps sunlight inside the glass tube which is used to heat either the water directly, or a special heat transfer fluid that transfers the heat to the water.

So why do people choose to pay more for an evacuated tube system? Well the main reason is that good ones will give you more hot water in colder parts of Australia.

They get more heat from the sun for a longer period of the day and their improved performance is most noticeable through the colder seasons and colder climates. This ultimately means that you will use less of your electric or gas booster if you live in those climates. On top of that the round tubes are excellent at self-cleaning when it rains also helping keep your system as efficient as possible.

So to sum up: you will get more solar heated hot water from an evacuated tube panel if you live in colder climates.

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