

SOLAR WATER HEATER REBATE INITIATIVE (SWRI) INFORMATION PACK



GOVERNMENT OF BERMUDA
Ministry of Economic Development
Department of Energy



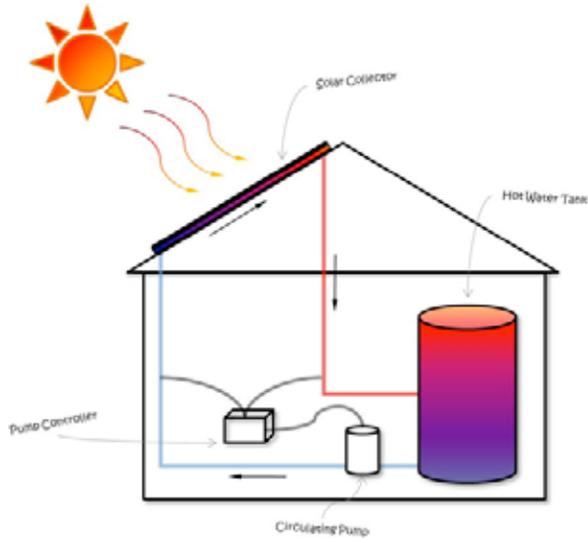
SOLAR HOT WATER PANELS USE sunlight to heat water, which can be used within your home.

This guide contains important information that may be useful if you are considering buying a solar hot water system for your home or small business.

GENERAL INFORMATION

WHAT IS A SOLAR HOT WATER SYSTEM?

There are several types of solar water heaters, but most pump cool water through pipes in a collector that is exposed to the sun. Glass on the front of the collector allows sunlight to pass into the collector, but prevents heat from escaping, like a greenhouse. The hot water returns to an insulated storage tank, similar to a regular hot water heater. This tank holds the hot water until it is required and ensures that hot water is still available even when the sun has gone down.



WHAT IF I NEED HOT WATER AT NIGHT?

Solar hot water tanks are usually large enough to store enough hot water during the day to provide for evening demand. An electronic controller stops the circulating pump when the collector cools down at night, which prevents excessive heat loss from the system. Most solar hot water tanks also have a back-up electrical water heater, so you always have hot water when you need it.

WHAT CAN I USE A SOLAR WATER HEATER FOR?

Solar water heaters can be used to provide hot water for your home or business and special low-temperature versions can also be used to heat swimming pools.

IS THE TECHNOLOGY ALREADY USED IN BERMUDA?

There are dozens of homes in Bermuda already using solar hot water technology, visit www.energy.gov.bm to view some of them.

HOW LONG WILL A SYSTEM LAST?

Most good-quality solar hot water systems will last over 20 years if well maintained, though some components may need replacing sooner and this should be accounted for when assessing the cost of a system.

I AM A LANDLORD, WHY SHOULD I GET A SOLAR HOT WATER SYSTEM FOR A PROPERTY I RENT OUT?

Investing in a solar water heating system can reduce your tenant's electricity bills for decades. Why not fit a system to a property you own and develop a new lease that includes payments from your tenants to cover the value of hot water you are producing for them? A solar water heating system may also make your property more attractive to potential tenants who would rather use 'clean' energy.

WHAT SIZE SYSTEM DO I NEED TO PROVIDE ENOUGH HOT WATER FOR MY HOME?

A 2–3 person home in Bermuda typically requires a solar collector with an area of 20–30 square feet, connected to a 50 gallon hot water tank, though system specifications will vary depending on technology and installer.

SYSTEM LOCATION

WHERE SHOULD THE SOLAR PANELS BE LOCATED?

For maximum energy yield, panels should be located in an un-shaded location that faces south at an angle close to 32 degrees from horizontal. You are encouraged to maintain the design and look of your property when considering where and how to install any panels. An experienced/reputable solar installer should be able to advise how best to integrate a system into the space available on your property.

WILL THE DEPARTMENT OF PLANNING ALLOW SOLAR HOT WATER PANELS?

The Bermuda Plan 2008 Planning Statement encourages the development of renewable energy sources and permits their installation in any zone at the discretion of the Development Applications Board, or through a Permitted Development Permit where applicable. To date, the majority of applications for solar hot water systems have been approved by the Department of Planning.

Most residential solar hot water systems only require a Permitted Development Permit, which can usually be obtained within a few weeks. More specific information is available in guidance notes GN101 (General Development Order) and GN102 (Permitted Development Permits) from the Department of Planning, www.planning.gov.bm. If the proposed system is larger than 400 square feet, a full DAP1 planning application must be submitted and a building permit will also be required.

Delays may be experienced if the application is incomplete or does not include all the relevant information, so please visit www.planning.gov.bm to view the Department's Guidance Note on Renewable Energy, GN112. For more information contact the Department of Planning directly at **(441) 297-7756**.

WILL SOLAR PANELS AFFECT THE ABILITY OF MY ROOF TO CATCH WATER?

Solar hot water panels should be installed carefully to avoid channeling water away from gutters. Although solar hot water panels are generally constructed from benign materials such as aluminium and glass, you should discuss any concerns about the impact of these systems on your drinking water quality with a experienced/reputable solar installer. If you need to paint your roof once the solar panels have been installed, it should be possible to reach under the mounting frame of many smaller systems with a specially adapted roller. Alternatively, it may be possible to remove panels to gain access, though this may increase the cost of painting your roof. Experience in Bermuda to date has shown the roof surface under solar panels typically remains in good condition as it is protected from weathering due to rain and damaging solar radiation.

FINANCIAL INFORMATION

HOW MUCH DOES A SOLAR HOT WATER SYSTEM COST?

A solar water heating system for a household with 2–3 occupants typically costs around \$4,000 to \$6,000 while a larger system may cost from \$8,000 to \$10,000 installed. The cost of swimming pool and commercial systems varies depending on the application. It is sensible to obtain several quotations from different installers to get a competitive price.

HOW MUCH WILL A HOT WATER SYSTEM REDUCE MY ELECTRIC BILL?

This depends on how much hot water you use. The Department of Energy estimates the average home in Bermuda currently spends between \$400 and \$1,000 on electricity to heat water every year — a properly designed solar water heater should reduce this cost by over 80%.

HOW LONG WILL IT TAKE FOR THE SYSTEM TO PAY FOR ITSELF?

The length of time it will take for a solar hot water system to pay for itself depends on the initial cost of the system and the cost of electricity over the lifetime of the system. Expect a reasonably priced system to pay for itself in around 4 - 5 years, though this will reduce as the price of fossil fuels increases. Your installer should be able to assist you with estimating how long it will take for your system to pay for itself.

WHAT IS THE GOVERNMENT DOING TO REDUCE THE COST OF SOLAR HOT WATER SYSTEMS?

There is no import duty on complete solar hot water systems and many spare parts. The Government also offers a rebate of up to \$1,500 if your system is installed by an experienced/reputable installer. More information is available from www.energy.gov.bm.

IS FINANCING AVAILABLE FOR SOLAR HOT WATER SYSTEMS?

Certain local banks and installers provide loans specifically for this technology, so you may be able to swap your existing electric bills for loan repayments on a solar hot water system. Once the loan has been repaid, you get free hot water!

I CAN'T AFFORD A SOLAR HOT WATER SYSTEM, WHAT ELSE CAN I DO?

Why not consider a heat pump water heater instead — although they still run on electricity, they only cost around \$2,000–\$2,500 and can save almost as much energy as a solar water heater. Go to the energy efficiency page of www.energy.gov.bm and check out the energy efficiency fact sheet on water heating for more tips on how you can reduce the amount of energy you use on hot water.

SYSTEM INSTALLATION INFORMATION

WHAT LOCAL COMPANIES INSTALL SOLAR HOT WATER SYSTEMS?

There are several local companies who are certified to design and install solar hot water systems. They can be found in the local telephone directory or by doing some research on-line for them.

CAN I INSTALL MY OWN SYSTEM?

Although solar hot water systems are relatively simple and can be installed with some basic knowledge and training, system design requires experience and skill, roof penetrations must be properly sealed to prevent leaks, fastenings must be able to withstand hurricane force winds, mixing valves must be used to prevent scalding and the system must be carefully configured for optimal performance. Due to the cost of the system and the potential safety hazards of improperly installed systems, the Department of Energy recommends you use an experienced/reputable installer who has the necessary knowledge and experience to ensure your system is properly designed and installed.

HOW DO I KNOW IF A SYSTEM IS GOOD QUALITY?

Solar hot water panels should be certified by the Solar Rating and Certification Corporation, so make sure you ask your installer for equipment that meets this standard. Installers should also hold an appropriate certification or manufacturer's endorsement, which demonstrates they have the knowledge to properly design and install solar hot water systems.

SHOULD I LOOK FOR A WARRANTY ON A SYSTEM?

Solar collectors and hot water tanks should have a 5–10 year warranty, and if the system uses a circulating pump and electronic pump controller these should have a warranty of at least a few years. Installers should also offer warranties for their work, particularly for any roof penetrations, though warranties will vary from company to company so make sure you ask around and choose carefully.

WILL SOLAR PANELS SURVIVE A HURRICANE?

Much like a roof, the survivability of a solar hot water system depends on how well it has been designed, built and also upon the particular conditions experienced during a hurricane. If your system is properly designed and installed on a strong roof using high-quality products it should withstand hurricane force winds. It is best to discuss any concerns directly with your solar installer, though you may also wish to consider insuring your system. Remember that damage could occur from flying debris such as loose tree branches, so if a hurricane is approaching, make sure you trim any trees and secure any loose objects near the solar collector.

SOLAR WATER HEATER REBATE INITIATIVE (SWRI)

WHO IS ELIGIBLE FOR THE REBATE?

The SWRI is available to any residents of Bermuda who wish to install a solar water heater on a residential dwelling which they own.

SWRI ALLOWANCE

SWRI applicants will be awarded a rebate based on the performance of the proposed solar water heating system. The maximum SWRI allowance per applicant will be \$1,500 and only one SWRI application will be allowed per assessment number. Once you have selected an experienced and reputable installer, they should be able to assist you in determining the exact amount for which you are eligible, though the table below provides an approximate guide, based on household size:

HOUSEHOLD SIZE (PERSONS) TYPICAL SWRI REBATE

1-2 \$800

3-4 \$1,200

4 or more \$1,500

NEXT STEPS

I WOULD LIKE A HOT WATER SYSTEM FOR MY PROPERTY, WHAT DO I DO NEXT?

If you are interested in getting a hot water system, then look for a experienced/reputable installer and arrange for them to view your property to determine if it is suitable for the technology. The steps below provide an overview of the Government application processes involved in applying for a system, and a qualified installer should be able to assist you in making the necessary applications.

STEP 1:

SELECT A EXPERIENCED/REPUTABLE INSTALLER

STEP 2:

SUBMIT APPLICATIONS

If the total collector area is 400 square feet or less and not located within a required setback submit the following applications (call the Department of Planning if unsure of setback requirements):

PERMITTED DEVELOPMENT PERMIT

Submit to the Department of Planning

Estimated cost: \$150

Estimated process time: 2 weeks

If the total collector area is more than 400 square feet submit the following applications:

DAP1 PLANNING APPLICATION FOR DEVELOPMENT

Submit to the Department of Planning and attach the following documents:

- 4 Location plans, showing the property outlined in red and access to the site highlighted in yellow.
- 4 Elevation plans and/or photo montage, showing what the panels will look like.
- 4 Site plans, showing the position of the proposed system in relation to boundaries, buildings and existing vegetation.
- 3 Completed DAP1 application forms, including details of the system dimensions, height, construction type and colour.
- A letter of acknowledgment signed by the owner of an adjacent property if located within a required setback (call Department of Planning if unsure of setback requirements)

Estimated cost: \$250 (retroactive application fee:\$6000)

Estimated process time: 2-5 months

BUILDING PERMIT APPLICATION

(Once approval has been granted for the DAP1 application)

Estimated cost: \$200 (retroactive application fee:\$6000)

Estimated process time: 2 weeks

STEP 3:

INSTALLATION:

Once a building permit has been issued, (either a Permitted Development Permit or DAP1), various mandatory inspections by a building inspector are required during the system installation process. The documentation that accompanies the building permit contains information for the mandatory required inspections. The Department of Planning will issue a Certificate of completion and occupancy once the system has been installed to the required standards as determined during the inspection process.

AFTER APPROVAL

SUBMIT APPLICATION

SOLAR WATER HEATER REBATE INITIATIVE PAYMENT CLAIM FORM

Submit to the Department of Energy

Estimated process time: 2 weeks

SWRI Payment Claim Form must be submitted within 12 months of the Department of Energy receiving the **SWRI Application Form** to be eligible.

FOR MORE INFORMATION GO TO:

WWW.ENERGY.GOV.BM

TO CONTACT THE DEPARTMENT OF ENERGY:

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