



Australian
Energy
Foundation



The Complete Guide To Choosing Your Perfect Hot Water Heat Pump

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Introduction

Not sure what you should look for in a new hot water heat pump?

Or whether the investment in an energy-efficient hot water system is worth it for you?

Learn how to confidently choose the perfect hot water heat pump for your home with this unbiased, comprehensive guide.

If you have any more questions or would like a free, no-pressure heat pump installation quote from a thoroughly vetted installer, [simply complete this short form](#), give our friendly energy efficiency experts a call at 1300 23 68 55 or email at advice@aef.com.au. We look forward to helping you!

1. Is a Hot Water Heat Pump Worth It? Can't I Just Replace My Old Water Heater with the Same System I Had Before?

It's easy to just wait until an old hot water system dies, then replace it with the exact same type.

Easier, but more expensive.

(And worse for the environment too).

How much more expensive?

On average, a conventional electric system costs [\\$635 more in energy bills per year](#).

Across a hot water system's 15 year lifespan, that's \$9,525 you can save by upgrading to an efficient hot water heat pump

Almost \$10,000 savings are far more than enough to repay any price difference between an average heating system and an efficient one.

So even if your current hot water system is doing fine, it's wise to research your options & plan its replacement before it dies.

Then when the inevitable happens, you won't be left scrambling to find a rushed replacement while your family's complaining about cold showers.

Instead, you'll be prepared to upgrade quickly with the best system for your home.

And choosing the right hot water heat pump doesn't have to be complicated.

In fact, you can find the 18 essential questions — as well as their answers — right here.



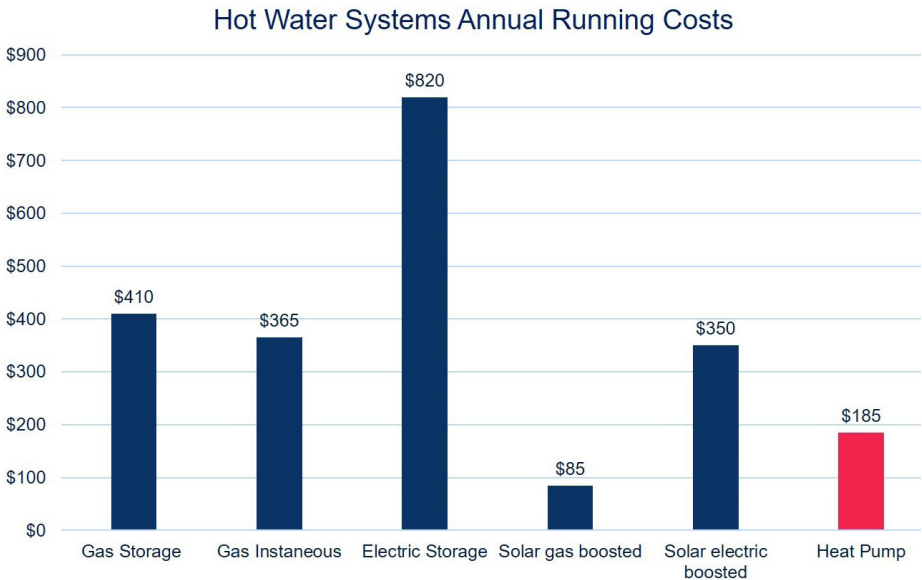
This clear, homeowner-friendly guide gives you all the information you need to choose the best hot water heat pump for your home.

It even includes a bonus list of 10 easy ways to reduce your home's hot water consumption; these will help you to start cutting hot water costs right now.

2. Will a Heat Pump Actually Help Me Save Money?

Since a heat pump's initial price is higher than that of an ordinary electric storage system (although the rebates in Section 12 help!), many homeowners wonder if heat pumps really will pay themselves off (and more) over the years.

Yes. Here's why:



Data sourced from Sustainability Victoria's Hot Water Running Costs and compares running costs of 5.5 star gas storage system, 7 star gas instantaneous system, electric storage off peak system, high-efficiency solar gas boosted system, high-efficiency solar electric boosted system, high-efficiency hot water heat pump on off peak tariff.

36% of Australian houses come with a hot water electric storage system; as seen, their use costs an average of **\$820/year**.

In contrast, high-efficiency heat pumps can do the same job for the same house for approximately **\$185/year**. Please note exact running costs depend on each household's electricity tariffs, pump model and hot water usage.

Thus, although the initial cost of a heat pump is higher than that of an electric storage system, its lower running costs save the average homeowner up to **\$635/year**.



So heat pump owners see their system pay for itself within 5-10 years, and save an average of \$3,100-\$6,300 over its 15-year lifetime.

Even the 45% who use gas heaters (whose running costs are lower than the usual electric storage hot water system) can still pay \$200 more per year than they would with heat pumps. That's \$3,000 more over the course of their system's lifetime.

And this difference is only likely to grow; changes in the gas market mean that most of our gas resources are now exported overseas, making gas much more expensive for Australian residences.

Solar Panels + Hot Water Heat Pump = Extra Savings

If you have solar panels, your hot water heat pump's running costs will be even lower:

1. Time your heat pump to power up around midday, when the sun is highest.
2. Your heat pump will store free solar energy in the form of hot water.
3. Then your family can use hot solar-powered water any time they want, even when the sun isn't shining.

This combination time-shift + self-consumed energy will cut your electricity bills even more than just a solar system, or just a heat pump, would on its own.

No need for an expensive electric car or \$10,000 storage battery — a solar energy and heat pump system allow you to store your solar energy with appliances you'd already have anyway.

Of course, the more water your household uses per year, the more a high-efficiency heat pump will save you. (See [Sustainability Victoria's hot water comparison chart](#) to see how much more you'll save per additional person).

So whether you're a one-person or six-person household, a heat pump can indeed help you save thousands.

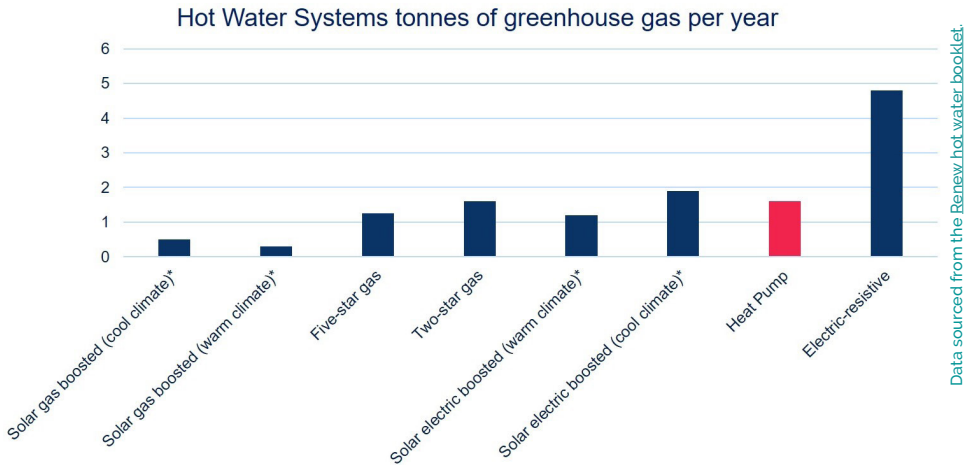


3. Are Heat Pumps More Environmentally Friendly?

Yes – 70% more than traditional electric storage systems.

Heat pumps decrease more than just your electricity bills.

If you switch to a heat pump from a traditional electric system, the pump can lower your hot water heating's carbon footprint by 70%:



Heat Pumps Vs. Electric-Resistive Systems

As shown in the graph, a traditional electric-resistive system releases 4.75 tonnes of greenhouse gases annually.

In contrast, heat pumps release only 1.6 tonnes of greenhouse gas annually.

The difference of 3.15 tonnes means that switching to a heat pump has the environmental impact of [taking a passenger car off the road for 10 months](#).

So heat pumps [save the atmosphere from the carbon equivalent of driving 12,600 km](#) – enough to cross Australia three times.

Heat Pumps Vs. Gas Heaters

As seen in the chart, the emissions from gas heaters are nearly equivalent to those from heat pumps (about 1.6 tonnes each).

However, this doesn't mean that gas heaters are as sustainable.

While gas heaters and heat pumps release comparable emissions, [acquiring gas is far more environmentally destructive](#).



As both Australian and foreign natural gas resources diminish, companies are forced to dig into near-inaccessible areas such as coal seams and shale layers. Obtaining gas from these difficult locations requires environmentally and agriculturally harmful methods such as hydraulic fracturing (fracking).

Thus, gas heaters depend on a non-renewable resource that has already caused significant environmental damage before it ever reaches a house.

In contrast, heat pumps are powered by electricity — whether it's from your own solar panels, [GreenPower](#), or the [grid \(which is becoming increasingly renewable\)](#).

Since heat pumps are powered by electricity instead of gas, they cause little to no of gas acquisition's environmental impact.

In the end, the numbers show that both electric and gas hot water systems come up short compared to heat pumps. So it's worth investing in a hot water system that's both economically and environmentally friendly .

4. How Much More Efficient Are Heat Pumps?

300%.

Yes, that's over 100% efficiency.

This is possible because, unlike gas and electric-resistive heaters, most heat pumps produce over three times as much energy as they take in.

A heat pump's efficiency in a particular location does vary depending on the model. You can check a model's efficiency for your own area in two ways:

1. Small Scale Technology Certificate (STCs)

For the best objective performance indicator of a heat pump:

[Use your postcode to see which Australian climate zone you're in.](#)

[Check the Clean Energy Regulator's online database](#) to see the number of STCs a heat pump earns within your particular climate zone.

The more STCs a heat pump earns in your zone, the more efficiently it will work for you.

2. Co-Efficient of Performance (COP)

You can find the COP score of a particular heat pump model on its specs sheet. Unlike STCs, COP can vary by temperature; the hotter the air, the more easily your pump can draw energy from it.

In addition, the way COP is measured and reported is not always consistent. That's why currently, the best objective performance indicator is the number of STCs the system earns in your given climate zone.



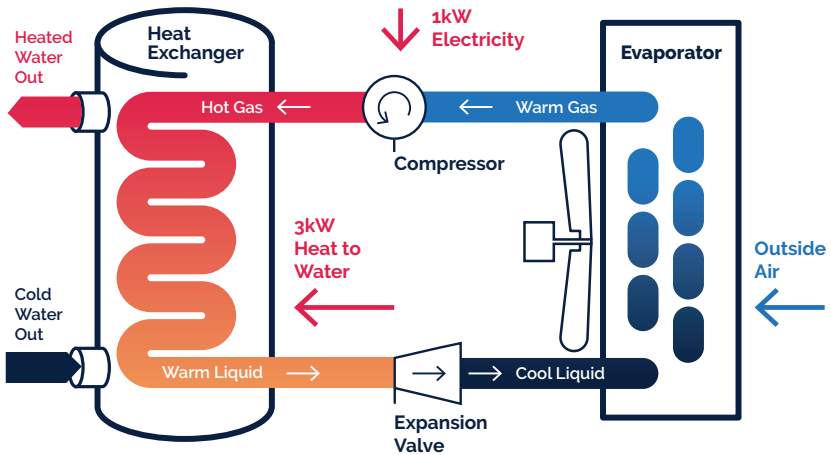
However, most hot water heat pumps' COP scores do consistently remain at 3 or above (some can even go up to 5).

This means that for every unit of electricity a heat pump uses, the pump moves 3 energy units into the water.

In contrast, since typical electric-resistive systems take in as much or more energy than they produce, they usually score a COP of 1 or below.

Thus, heat pumps are 3 times more efficient than electric-resistive heating systems.

5. How Do Heat Pumps Work?



The tripled efficiency and low running costs of heat pumps stem from their low-energy, low-impact operation.

In fact, you probably already have two heat pumps in your house: your air conditioner and your refrigerator.

These work the same way as a hot water heat pump: all three systems concentrate ambient heat from the surrounding air, then send ("pump") that heat into the water in their storage tank.

Since this process merely concentrates existing heat instead of having to create more, heat pumps reduce annual hot water energy requirements by 50-80% compared to electric-resistive home systems.

Thus, they are considered renewable systems and are eligible for STC rebates.



6. Which Hot Water Heat Pump Brands Are Best?

Highly respected & reliable heat pump brands include (in alphabetical order):

Bosch Thermotechnology

Quantum Energy

Reclaim Energy

Sanden

Stiebel Eltron

Looking at real-world reviews will tell you which heat pump brands & models can work best for you. Check out the heat pump pages of trustworthy review sites such as [Product Review](#) and [Whirlpool Forums](#).

If you'd like expert, unbiased 1-1 guidance, you can also [contact us](#) for advice and tips on choosing the best heat pump for your location & needs.

7. What Size Hot Water Heat Pump Do I Need?

Basic Rule: The larger the tank, the more energy it needs to maintain water temperature.

So if you get a larger system than your family needs, you'll incur these "standing losses" in the form of higher electricity bills.

On the other hand, a too-small system will result in a shock of cold water for frustrated residents when the hot water runs out too quickly (and often at the worst possible time & place: in the middle of a shower).

To find the perfect balance between lower electricity bills and your family's need for hot water, follow these steps:

1. Count the number of people in your household, and consider the people who might join or leave your household soon.
2. Assume that each person will use around 50 litres of hot water per day. (Modify if someone prefers cold showers or very long, very hot ones).
3. Require that your hot water tank keeps 1.5 days' capacity at all times.
4. Thus, multiply the number of people by 75.

This will give you an estimate of how large your water tank should be.

Keep in mind that people sell houses and move on, but the hot water system stays. So ideally, the system should be sized for the dwelling itself.

For example, since a 3-bedroom house can comfortably accommodate 4 people, it should have a 300-litre tank.



8. Is My Climate Too Cold for a Hot Water Heat Pump?



As long as you buy a heat pump optimized for your own climate zone, your heat pump will continue to operate near its usual 300% efficiency all year long.

It's true that some heat pumps struggle in below-freezing weather, and may need a resistive electric booster in such conditions.

However, [recent advances in cold-climate heat pump technology](#) allow you to use a heat pump no matter where you live. Just be sure that when you're considering a particular heat pump, you check its spec sheet for your climate zone.





9. Should I Get an Integrated or a Split Heat Pump System?

Heat pump systems are configured in one of two ways:

1. Integrated
2. Split

Each type of system has its pros and cons:

Features	Integrated Heat Pump System	Split Heat Pump System
Design	<p>Evaporator + fan mounted on top of, or beside, tank.</p>  <p>2 components form a single unit</p>	<p>Evaporator + fan separate from tank.</p>  <p>Each of the 2 components can be placed in a different location.</p>
Ease of Movement	<p>Greater unit weight may need 2 people to move & install it.</p>	<p>Smaller, separate units are easier to move.</p>
Location Flexibility	<p>Entire system needs a large space for sufficient ambient airflow (i.e. not indoors)</p>	<p>Separate tank can be installed in almost any location, including confined spaces (i.e. tank inside home + heat pump on outside wall)</p>

Pro Tip:

To minimise heat loss in pipes & maximise savings, install your system as close as possible to all locations of regular hot water use.

If this isn't possible, locate it close to the kitchen or bathroom, where small amounts of hot water are frequently used.



For most households, either system results in similar economic and environmental benefits. So choose whichever system fits best into the space in your home & property.

10. How Long Do Heat Pumps Take to Replace Hot Water?

It's unlikely that you'll find yourself without hot water. Still, to be on the safe side, choose a unit that has a fast rate of recovery. If members of your family enjoy taking long, leisurely hot showers daily, it will quickly reheat the water in its tank to your desired temperature.

For instance, some units can heat 50L within 15 minutes. So if you're ever without hot water, you'll get it back quickly!

11. How Much Does a Heat Pump Cost?

With the federal incentive provided through [Australia's Small Scale Renewable Energy Scheme](#), most heat pump systems cost \$2,500 – \$5,000, including materials and installation fees.

If valves or pipes need to be altered, this will incur additional costs; however, the need for such alterations is unlikely.

See Section 12 for rebates that will help cut the initial cost:

12. What Rebates Can I Use for Hot Water Heat Pumps?

Under the federal government's [Small Scale Renewable Energy Scheme \(SRES\)](#), hot water heat pump systems qualify for small-scale technology certificates (STCs). You can exchange these for a rebate when you purchase your heat pump. Since STCs are usually arranged by the supplier, you don't even have to do paperwork to receive these discounts.

On average, STCs can save you \$800-\$1,000 on the cost of a new hot water heat pump system. You can find the STC value for a particular make & model with the [REC Registry's online calculator](#).

Many states also add their own incentives and rebates:

ACT residents can save [\\$750-\\$1,200 on a new heat pump](#)

QLD residents can receive a [\\$200 rebate](#)

VIC residents with a combined household income under \$180,000 can receive a [\\$1,000 rebate](#) as part of the Solar Homes package.

Depending on the system type they upgrade from, Victorian residents can also receive an additional \$300-\$1500.



It's true that the initial price of a hot water heat pump will probably still be higher than that of a comparable conventional water heater.

However, a heat pump's lower running cost will pay for this difference within 5-10 years, leaving you with a net average of **\$3,000 – \$6,000 in lifetime savings**.

13. What Warranties Should I Look For?

Warranties vary by manufacturer. Read the conditions carefully, especially those concerning labor. Some warranties require professional installation, regular servicing, and adequate water quality.

Recommended warranty lengths:

Heat Pump System: 6+ years

Tank: 5-10 years

Associated Valve Work: 12 months

Before buying, also ensure that prompt heat pump service is available in your area (it usually is, but it never hurts to check).

14. How Noisy Are Heat Pumps?

37dB (noise level inside a library) — 50 dB (quiet suburban traffic)

Like the outdoor unit of an air conditioner, heat pumps do make some noise. But modern pumps are usually quiet enough to fade into the background of a calm suburb.

Many systems also have a programmable timer which you can use to keep noise levels down at night. It's also best to keep them away from bedrooms unless they're only run during the day.

Even simpler, you can always check the decibel level on a particular model to make sure you have a quieter heat pump.

15. Should I Get a Hot Water Heat Pump With a Timer?

Most current hot water heat pumps come with automatic timers. You can use these to maximise heating during higher daytime ambient temperatures, and (if you have a solar system) use free PV-generated energy to do so.

These timers can always be re-programmed or overridden in case you need extra hot water at other times.



16. Does Refrigerant Type Matter (And If So, Which One Should I Use)?

Yes.

R290 (propane) or R744 (carbon dioxide).

Many refrigerants have a dangerously high global warming potential (GWP); this becomes a particular problem if they leak or are dumped.

Fortunately, the simplicity and (relatively) small size of residential heat pumps means that you won't be facing serious problems yourself.

However, it's important to know that many common refrigerants are hydrofluorocarbons (HFCs), all of which have very high GWPs.

So stay away from refrigerants such as R134a, which has a stunning 1430 GWP.

Instead, use low-GWP refrigerants such as hydrocarbons (propane, or R290, GWP 3.3) or carbon dioxide (R744, GWP 1):

Since Australia has begun a phase-down of HFCs, finding earth-friendly refrigerants is easier than ever. Hot water heat pump brands already using these environmentally safer refrigerants include Sanden and Reclaim.

17. What Kind Of Hot Water Tank Should I Get?

You'll have two main options: stainless steel and glass-lined tanks.

Stainless Steel Tanks

If you don't have high mineral or bore water, stainless steel tanks could be a good option. They usually come with 10-year warranties.

Glass-Lined Tanks

If you have high mineral or bore water, glass-lined tanks are your best option.

These water types often erode stainless steel tanks (thus causing leaks) while glass-lined tanks remain impervious.

In fact, glass-lined tanks perform well in all Australian conditions and water types. Unlike stainless steel tanks, they usually come with shorter 5-year warranties.

Most likely, you won't have to make this decision yourself; your supplier will happily recommend the right tank for your home.



18. How should I choose the right installer?

Use this checklist to find a trustworthy, reliable hot water pump installer:

Certified plumber: [check this list of required certifications for plumbers in your state](#)

Informative, transparent sales process

No pressure tactics — you should never feel rushed towards a decision

Clear, easily understood quote that details all expenses

Quick, attentive, and courteous communication (both phone and in-person)

Timeliness in keeping appointments

Clear warranty information

Numerous positive online reviews



Bonus: 10 Ways to Cut Your Hot Water Costs

In Australia, hot water accounts for approximately 25% of all annual home energy use. So whether you've just bought a new hot water system or want to lower your energy bills using your current one, these hot water tips will help your family save money without having to sacrifice cleanliness and convenience.

1. Take Showers Instead of Baths

While taking an occasional bath is quite relaxing, showering is most efficient for daily use. An 8-10 minute shower uses [75-150 litres less than the average bath](#).

2. Upgrade to a Water-Efficient Showerhead

On average, showering and bathing account for 60% of a household's water bill. So upgrading to a more efficient showerhead (and taking shorter showers) will cut water bills most. To find a money-saving showerhead, look for one with a WELS rating of 3 or above. As the below table shows, a 3-star showerhead uses about 40% less water per minute than a typical 1-star showerhead (imagine the savings for a 4-person family over a month!)

Showerhead	Length of shower (minutes)			
	4	8	10	15
1 star rated showerhead	42 litres	84 litres	105 litres	158 litres
2 star rated showerhead	34 litres	67 litres	84 litres	126 litres
3 star rated showerhead	25 litres	50 litres	63 litres	95 litres

[Data sourced from Ausgrid's Hot Water Guide](#)

3. Use a Shower Timer to Take Shorter Showers

Want to cut your shower costs in half? Halve your shower time. It's true — the most cost-efficient shower is 4 minutes long (and here are some fun ideas to get your family on board.) If you're not up for that drastic a change yet, aim for just two minutes shorter than your current shower. You'll hardly notice, and will still save 20+ litres per shower — over 400 litres per month, per person. You can also halve your shower costs by combining an efficient showerhead with sdtghtly shorter showers. For example, a 10-minute shower with a typical showerhead will use 105 litres, while an 8-minute shower with a 3-star showerhead will use only 50. That way, you can enjoy a relaxing shower without worrying about its cost.



4. Wash Laundry in Cold Water

Many clothes require cold washes anyway. Throw in the rest of your laundry with them, and save 80% of the energy needed to run a typical warm water cycle.

5. Insulate Hot Water Pipes

The less heat escaping from your hot water pipes, the less unused heat you'll have to pay for. Insulate them with pipe lagging, especially the two metres closest to your water heater.

6. Set Your Hot Water Thermostat to 60C for Storage

Keeping your stored hot water at a moderate temperature will use less energy than making it remain piping hot. Just remember that to protect your hot water from [Legionella](#), never lower the temperature to below 60 degrees.

7. Let Your Hot Water Take a Holiday When You Do

If you won't use your hot water for a few weeks, don't pay to keep it hot. Turn your hot water unit off when you take a holiday; some systems even have a built-in 'vacation' setting. Just remember that some off-peak systems will need to reheat overnight when you return. And as aforesaid, protect your household from Legionella by heating water up to 60°C for at least half an hour before anyone uses it.

8. Have Your Hot Water System Serviced Regularly

Don't let regular service checks slide off the radar. Even minor issues in hot water systems compromise their efficiency, and major issues result in costly repairs that preventative maintenance could have averted. Depending on its type, your hot water system should be serviced according to the user manual.

9. Upgrade to a High-Efficiency System

If your hot water system is over 10 years old, it may be nearing the end of its useful life. We recommend that you begin to get quotes for efficient systems now, so that by the time it needs to be upgraded you'll be well prepared. When it's time to replace it, choose a high-efficiency hot water heat pump or solar hot water model. It will provide the same heating with at least 60% less energy — possibly more. This enables the high-efficiency system to pay for itself, then save you an additional \$3,000 – \$6,000 over its 15-year lifetime.

10. Assess & Optimize Hot Water Use Before Sizing a New System

There's no point in paying for a larger, more costly hot water system if you don't need it. Ensure that your new unit is the right size for your household by putting the first 8 tips into practice first. After you've reduced your home's hot water consumption, you may find that your household needs a smaller and less expensive model than you originally thought!



Australian Energy Foundation

While this guide answered the big 18 questions about hot water heat pumps, we know that you'll probably think of many more as you consider this major decision.

Our non-profit team of experienced energy advisors is here to answer any questions you have about choosing hot water systems: just get in touch with us at 1300 23 68 55 or email advice@aef.com.au for friendly, unbiased professional guidance.

If you're ready to get a free, no-pressure quote from a thoroughly vetted hot water heat pump installer, [click here](#).

And finally, thank you for reading our ***Complete Guide to Choosing Your Perfect Hot Water Heat Pump***. We hope you found it helpful in your journey towards a comfortable home with lower electricity bills.

The Australian Energy Foundation

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